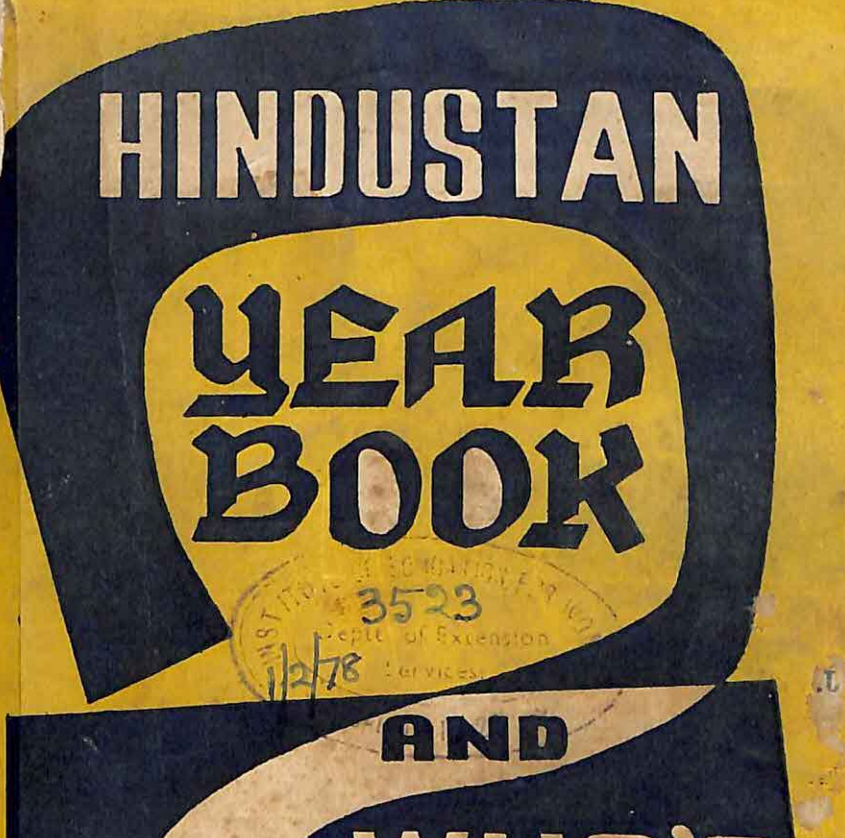

HINDUSTAN

YEAR BOOK

AND

WHO'S WHO

1977

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HINDUSTAN YEAR-BOOK

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AND

WHO'S WHO

1977

Edited by

S. SARKAR

45th year of Issue

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PREFACE

The 45th annual edition of the 'Hindustan Year Book & Who's Who' has been thoroughly revised with latest corrections, additions of new items of topical interest, alterations of existing materials and deletion of items which were found unnecessary.

Even then your Editor will much appreciate if readers kindly point out the errors and ommissions inadvertantly crept into this edition. Your Editor takes this opportunity to acknowledge with thanks the receipt of the letters he has received during the last year congratulating him for his work or suggesting him for the betterment of this book. It is regretted that replies could not be sent to all those readers individually due to obvious reasons.

The little delay in bringing out this edition is due to the fact that the results of the Lok Sabha Elections 1977 has been included to make the publication more informative and up-to-date. Results of Olympics 1976 held at Montreal has also been covered exclusively.

The Editor further takes this occasion to express his sincere thanks to Sri Sukumar Biswas who has helped him to revise this edition.

S. Sarkar
Editor

CONTENTS

PART I

Indian Chronology 1—3
History of India 4—12
India : The Country 12—21
Geographical Information 21—26
General Information 26—33
The Calendar 33—37
Astronomical Data 37—40
Science 40—44
Political Information 45—69
United Nations 70—78
World Gazetter 79—124
Indian Information 125—132
Constitution of India 132—147
Education, Science & Culture 148—176
Atomic Energy 177—187
Transport 187—195
Ports 195—204
Shipping 205—210
Railways 210—217
Civil Avaition 217—219
Meteorological Affairs 219—222
Tourism 222—224
Labour 224—234
Minerals 234—245
Iron & Steel 245—254
Coal 254—258
Mineral Oil 258—264
Irrigation 264—277
Power Generation 277—285
Legal Affairs 285—295
Agriculture 295—305
Fertilizers 305—307
Fishery 308—310
Animal Husbandary 311—314
Dairy Farming 315—316
Forests 317—323
Wild Life 323—328
Public Health 328—340
Family Planning 341—342
Industries 343—373
Small-Scale-Industies 374—380
Companies 381—383
Five-year Plans 383—396
Posts & Telegraphs 397—404
Broadcasting 405—409
Films 409—415
Press & Publications 415—426
Insurance 427—431
Financial Institutions 431—437
National Income 438—439
Public Finance 440—454
Currency & Exchange 455—456
Public Debt 456—460
Banks 460—471

CONTENTS

Commerce 471—489
External Loans & Aids 490—501
Language 502—504
Sports 505—522
National Honours & Awards 523—537
Foreign Affairs 537—548

PART II

States & Territories 3—25
Population 26—27
Events in 1976 28—31
International Affairs, 1976 31—34
Indian Events, 1976 34—36
India in World Affairs 37—40
Bangladesh 40—41
Indo-Pakistan Relations 41—42
Deaths in 1976 43
Economic News Round-up, 1976 43—46
Who's Who 47—58
Elections 59—80
Indian Directory 81—83

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CALCUTTA
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HINDUSTAN YEAR-BOOK

PART I

INSTITUTE OF EDUCATION FOR WOMEN.
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Indian Chronology

B.C.

3500-2500—Indus Valley Civilization.

1500-1000—Rigveda compiled.

1000-500—Age of Ramayana, Mahabharata or Bhagwat Gita.

563-483—Birth and death of Buddha.

540-468—Traditional years of birth and death of Mahavira.

377—Buddist Council at Vaisali.

327—Alexander invaded India.

323—Maurya Empire founded by Chandragupta.

273-232—Reign of Asoka.

190—Greek Kingdoms of N.W. India.

58—Beginning of Vikram Era.

A.D.

64-225—Kushan Dynasty in N.W. India ; South Indian Kingdoms of Cholas, Cheras and Pandavas.

78—Accession of Kanishka. Beginning of Saka Era.

320-475—Gupta dynasty ; Ajanta Cave frescoes and Ellora Cave carvings.

335-376—Reign of Samudra Gupta.

376-415—Reign of Chandragupta II (Vikramaditya).

405-11—Fa-Hien's travels.

454—First Hun invasion.

480-90—Fall of Gupta Empire.

606-647—Reign of Harshavardhana.

629-645—Hiuen Tsang's travels.

711—Arab conquest of Sind by Mohammed-bin-Qasim.

730—Yasavarman of Kanyakubja.

735—First Parsi settlement.

760-1142—Palas of Bengal.

820—Death of Sankaracharya.

960-1200—Chandellas of Bundelkhand.

1000-1026—Muslim invasion of India by Mahmud of Ghazni.

1050—Atisha Dipankara sent on Buddhist mission to Tibet.

1192—Defeat and death of Prithviraj, the last Rajput King of Delhi.

1206-1209—Establishment of Muslim rule in North India ; Reign of Slave Kings.

1221—First Mongol invasion by Chengiz Khan.

1228—Conquest of Assam by the Ahoms.

1230—Vijaynagar Kingdom founded.

1236—Accession of Raziya.

1320-1414—Reign of Tughlak Sultans of Delhi.

1334-1342—Iban Batuta in India.

1347—Bahmani Kingdom of Deccan founded.

1398—Invasion of Taimur.

1451-1526—Reign of Lodi Sultans of Delhi

1469—Birth of Guru Nanak.

1436-1533—Life of Sri Chaitanya, Saint of Bengal.

1494—Foundation of Agra by Sikandar Lodi.

1498—Vasco da Gama reached Calicut.

1510—Portuguese captured Goa.

1526—First Battle of Panipat and establishment of Mughal Empire by Babar.

1539-45—Reign of Sher Shah.
1556-1605—Reign of Akbar.
1597—Death of Rana Pratap.
1600—East India Co. founded by Royal Charter.
1605—Death of Akbar.
1612—1st English factory set up at Surat.
1627-57—Reign of Shah Jahan.
1627—Birth of Sivaji.
1644—Farman permitting the English to trade in Bengal.
1658-1707—Reign of Aurangzeb.
1668—1st French factory set up at Surat.
1675—Execution of Tegh Bahadur, 9th Sikh Guru, by Aurangzeb.
1686-87—Fall of the Kingdoms of Bijapur and Golconda.
1680—E. I. Company established trading centre at Calcutta.
1698—The English obtained Zamindari of the three villages of Sutanati, Kalikata and Gobindapur—nucleus of Calcutta.
1707—Death of Aurangzeb.
1734—Nadir Shah sacked Delhi.
1757—Batle of Plassey (23 June).
1761—Third Battle of Panipat.
1765—Grant of Dewani of Bengal, Bihar and Orissa to E. I. Co. by Mughal Emperor Shah Alam.
1772—Warren Hastings appointed first Governor-General of British India.
1775—Execution of Nanda Kumar.
1780—Ranjit Singh established Sikh Empire.
1781—First Newspaper, Hickey's Calcutta Gazette in India (29 January).
1784—Pitt's India Bill passed by British Parliament.
1790—Third Mysore War.
1793—Permanent Settlement of Bengal.
1799—Death of Tippo Sultan.
1829—Brahmo Samaj founded by Raja Rammohun Roy ; Prohibition of Sati.
1835—Introduction of English as the medium of instruction.
1839—Death of Ranjit Singh.
1839-42—Anglo-Afghan War.
1853—Opening of railways (16 April) and telegraphs.
1854—Wood's Despatch on Education ; First postage stamp issued (1 Oct.).
1856—Annexation of Oudh by the British ; Introduction of Hindu widow marriage.
1857—Indian Mutiny.
1858—Transfer of India from E. I. Co. to British Crown.
1861—Birth of Rabindranath Tagore.
1869—Birth of Mahatma Gandhi.
1874—Great Famine of Bengal.
1875—Arya Samaj founded by Dayananda Saraswati.
1885—First session of the Indian National Congress in Bombay.
1905—Partition of Bengal.
1906—Foundation of the Muslim League.
1911—Partition of Bengal revoked: First inland air mail flight (18 Feb.).
1914—Gandhi returnred to India from South Africa ; Beginning of World War I.

1918—Montague-Chelmsford Reforms ; Jalianwalabagh massacre at Amritsar (13 April); Third Afghan War.
1921—Non-Co-operation Movement by Mahatma Gandhi.
1930—C. D: Movement started by Congress ; 1st session of the Round Table Conference.
1931—Gandhi-Irwin Pact.
1935—Govt. of India Act passed.
1937—Inauguration of Provincial Autonomy ; Congress Ministries in majority of Provinces; Burma separated from India (1 April).
1942—Cripps' Mission ; 'Quit India' Movement.
1943—Bengal Famines.
1946—Cabinet Mission's Plan ; Interim Government with J. L. Nehru as Prime Minister and widespread communal riot.
1947—Partition of India ; India became independent (15 Aug.); Kashmir attacked by Pakistan.
1948—Martyrdom of Mahatma Gandhi (30 Jan.); India's appeal to U.N. to stop aggression by Pakistan in Kashmir (2 Jan.).
1949—India's new Constitution passed into law (26 Nov.).
1950—India became a Republic (26 Jan.).
1951—1st Five-Year Plan launched.
1952—First General Election.
1954—French Settlements in India merged to India ; Doctrine of Panch Shila accepted.
1956—Indian States re-organised on linguistic basis ; 2nd Five-Year Plan launched.
1957—Second General Election.
1960—Partition of Bombay into Maharashtra and Gujarat.
1961—Goa occupied by India.
1962—China attacked India (Oct.); Third-General Election.
1964—Death of Jawaharlal Nehru (27 May); Lal Bahadur Shastri became Prime Minister (9 June).
1965—Mt. Everest conquered by Indians (20 May) ; Indo-Pak. undeclared war (5 August—22 September).
1966—Death of Lal Bahadur Shastri at Tashkhent (11 Jan.); Indira Gandhi became Prime Minister of India (24 Jan.); Partition of Punjub into Punjab and Haryana (1 Nov.).
1967—Fourth General Election (15-20 Feb.).
1970—Creation of Meghalaya.
1971—Himachal Pradesh became a State (2 April); Mid-term Lok Sabha Election (1-10 March); Indio-Soviet Treaty (9 Aug.); Indo-Pakistan War (3-16 Dec.).
1972—Fifth General Election; New States of Meghalaya (20 Jan.), Tripura (21 Jan.) and Manipur (21 Jan.) formed ; Simla Agreement signed with Pakistan (3 July).
1974—Underground nuclear explosion carried out (18 May).
1975—Sikkim became a state of India (April) ; The first Indian satellite *Aryabhata* went into orbit around the earth on 19th April ; State of Emergency declared (26 June).

History of India

The history of India of ancient times is mostly written in its scriptures and mythology. The earliest inhabitants of India settled along the banks of great streams. The discovery of two ancient cities, Mohenjo-daro in the Larkana district of Sind, and Harappa in the Montgomery district of the Punjab and excavations at other sites have revealed that some five thousand years ago a high-level civilization flourished in these parts of India.

The main source of information on the Indo-Aryans is the Vedic hymns, the oldest literary remains in the Indo-Aryan language group. The Aryans were pastoral tribesmen and warriors, tall and fair with straight noses. Their first movement into India, about the beginning of the second millenium B.C. was as settlers, with their wives and children and their cattles. This quiet infiltration of immigrants, followed by others, resulted in expansion and conflict with the local inhabitants. They were crushed and destroyed. That the first Aryan invaders were a nomadic people can be assumed from the Vedas. The Rig-Veda gives us a clear picture of the social life of these Indo-Aryans.

The social and economic order of the Indo-Aryans crystallized into a new society, and information regarding this period of expansion is contained in two great works—the Mahabharata, and the Ramayana. The former contains one of the most profound philosophical poems of all times when Krishna addresses Arjuna before the battle. His words form the Bhagwad Gita.

The sixth century B.C. is the beginning of uncertainty in Indian history. The old religion of the Vedas, which was pragmatic and sacrificial, had lost its appeal with the masses. The period of *Upanishads* (C. 800-600 B.C.) is significant for the growth of pessimism. The *Sankhya* school, founded by Kapila about the time of Upanishads, was basically materialistic. The two great reformers, Vardhamana Mahavira and Gautama Buddha were born into a religious climate saturated with the Sankhya system and this had considerable effect upon the doctrines they formulated.

Vardhamana Mahavira, to whom Jainism owes its establishment as a faith, lived from 540 to 480 B.C. Siddhartha Gautama or Sakyamuni, who was known after his enlightenment as the Buddha, lived between 500 and 400 B.C.

In 326 B.C. Alexander the Great entered India and reached Beas, one of the five rivers of the Punjab. but was prevented from occupying the Gangetic plain as his troops refused to march farther. This saved

Magadha, then ruled by one of the nine Nandas. Thus, accepting Indus as the boundary of his new-won empire, he left India in 325 B.C.

A few years after Alexander left India, the Nanda dynasty was overthrown by Chandragupta Maurya, an illegitimate son of one of the reigning Nandas, and also the Chief of the Army. Chandragupta occupied Pataliputra and became very powerful by 305 B.C. About 302 B.C. a Greek ambassador at Pataliputra, Megasthenes, wrote a detailed account of India as he knew. Chandragupta was succeeded by his son Bindusara who is not much known about his activities. Bindusara died in 277 B.C. and the reign of Asoka began. Asoka as prince was the viceroy of Taxila and later of Ujjain. In 261 B.C. he invaded the last independent kingdom, Kalinga, on the Bay of Bengal. In this campaign Asoka killed 100,000 people and took 125,000 as captive. The Maurya Empire this extended from the Himalayas to Mysore, and from the borders of Assam to the Hindu Kush.

Immediately after this Asoka was converted to Buddhism and the influence of Asoka on Buddhism is as significant as that of Buddhism on Asoka. Buddhism itself began to change. Asoka died in 232 B.C. By 185 B.C. the Maurya Empire began to disintegrate.

After the fall of the Maurya Empire, a great political unrest followed for the next six centuries until the Gupta Empire rose to power in the 4th century. The South was divided into a number of warring kingdoms. The North was again invaded by the Greeks and other invaders. Of these, Kushans came at the beginning of the 1st century A.D. The greatest of the Kushan kings was Kanishka.

Under the Gupta Empire India enjoyed a period of prosperity and political stabilization. After the decline of the Gupta Empire, no imperial power emerged in North India till the 7th century when Harsha united the whole of North India. Harsha was a great general, a just administrator and the last Hindu emperor.

In the 8th century the tide of Mahommedan conquest began with Kashim's advance into Sind (711 A.D.). But the Mahommedans were driven out in 828 and for more than 150 years afterwards the strong feudal and tribal organisations of the northern Hindu Kingdoms were a barrier to the Muslim advance. At length in the year 1001 Mahmud of Ghajni made the Punjab a province of Ghajni.

In 1192, Mahmud of Ghur attacked and conquered the Gangetic valley. Upon his death, one of his slaves and generals, Kutub-ud-din Aibak who was in the charge of Ghur's Indian possessions, set himself up as Sultan at Delhi (1206). He was the first of a long line of so-called Turko-Afghan Sultans. Alauddin Khilji of this dynasty gave northern India a measure of political stability.

In 1398, Timur or Tamerlane led a great Mughal invasion in India, and after sacking Delhi retired into Central Asia.

In 1526, Sultan Babar, a descendant of Tamerlane, founded the Mughal Empire in India. His son Humayun was overthown by an

Afghan landlord of Bihar, Sher Shah. But after the death of Sher Shah, Humayun recaptured some of his old possessions in India. Babar's grandson Akbar reigned from 1556 to 1605 and extended his power over most of the peninsula, being distinguished by his justice and his tolerance in matters of religion.

His son Jehangir received an ambassador, Sir Thomas Roe, from James I, King of England, in 1615. His son Shahjehan, who built the Taj Mahal, was famous for his patronage of art and culture. He was deposed in 1658 by his third son Aurangzeb, who made war successfully with the Afghans, the Rajput tribes and the rising power of Mahrattas led by Sivaji. The Sikhs formed a religious and military commonwealth in the Punjab in 1675. On the death of Aurangzeb in 1707 the Mughal Empire began to decline. Mahommedan viceroys like the Nizam of Hyderabad and the ruler of Oudh declared their independence. Hindu States of the Rajputs and Mahrattas and Sikhs began to harass the curmbling Empire. In 1738, Nadir Shah of Persia swept down on India, sacked Delhi, and carried away a huge amount of treasures. The two immediate successors of Aurangzeb, Bahadur Shah and Zahandar Shah, were incapable rulers. During the reign of Mohammed Shah, the Mahrattas, who had already subdued the Deccan, wrung first Malwar in 1743, then Orissa in 1751 from the feeble fold of the Mughal Emperor. The same year saw the first inroad of the Afghan Prince Ahmed Shah, followed in quick succession by three other invasions, to repeal which the assistance of the Mahrattas was obtained. In 1761 the decisive battle of Panipat was fought between the Afghans and the Mahrattas, and it ended in the defeat of the latter.

In the beginning of the 16th century the Portuguese, following in the wake of Vasco da Gama, had established factories and fortresses on the coast of Malabar, and soon extended their power over nearly all the ports and islands on the coasts of Persia and India. In 1595, the Dutch gained a footing in India. The English traders in the name of East India Company had formed commercial settlements in India as early as 1613. Surat was their chief station. A grant of small territory around Madras was received from the Rajah of Vijayanagar in 1639 on which was erected the fort St. George. Madras became a presidency in 1654. Calcutta, ultimately the seat of the British Government in India, was founded in 1960 and became a presidency in 1707. The English early came into collision with the Portuguese and Dutch, but it was the struggle with the French in India for influence over the native princes that led step by step to the establishment of the British Empire in India. The first conflict with the French took place in 1946, when the English lost Madras, which, however, was restored by the treaty of Aix-la-Chapalle. In 1751 Dupleix, the French Governor of Pondichery, was powerful enough to place his own men on the throne of the Deccan and the Carnatic. The English supported the rival candidates, and the result was a second war, which left the English influence predominant in the Carnatic, though the French still controlled the Deccan. The most memorable incident in this war was Clive's capture of Arcot.

About this time the Nawab of Bengal, Siraj-ud-daula, attacked the English settlement of Calcutta with a large army and forced it to capitulate. Clive was at once sent with an armed force from Madras. He recovered Calcutta, attacked and took French settlement at Chandannagore, routed the Nawab's army at the battle of Plassey on 23rd June, 1757, and placed Mir Jaffar in the viceregal throne, with the consent of the dwindling Mughal Court. In the south the English also were equally victorious. A force despatched by Clive took Masslipattam, and the victory gained by Coote at Wandewash on 22nd January, 1760 completed the destruction of the French power in India.

In Bengal Mir Jaffar soon found himself unable to meet claims of his allies and in 1760 he was deposed in favour of Mir Kasim, who agreed to pay the balance due by Mir Zaffar as well as grant the districts of Burdwan, Midnapore and Chittagong to the English. But disputes soon led to a war, in which Mir Kasim was ousted and forced to flee. The British retained the collectorship or fiscal administration of Bengal, Bihar and Orissa, under the grant of Mughal Emperor. A nominal local ruler, however, was appointed in the shape of a Nawab, who received a fat allowance of £600,000 from the British and the actual collection of the revenues was left to local officials.

This system of dual government established by Clive was abolished in 1772 by Warren Hastings, who appointed British officers to collect the revenues and preside in the courts and then laid the foundation of the British administration in India. In 1774 Hastings was made Governor-General of India. Amongst the notable measures of his period was the refusal to pay tribute to the Mughal Emperor, sale of the provinces of Allahabad and Kora to the Nawab of Oudh and the loan of British troops to the same Nawab for the subjection of the Rohilla Afghans. For these and other acts Hastings was impeached on his return to England. In 1778, the intrigues of the Bombay Government led to the first war with the Mahrattas, in which the British Army were only saved from disgrace by the achievements of the Bengal Army sent by Hastings; and in the war with the Sultan of Mysore, the diplomatic skill of Hastings and the valour of the Bengal troops under Sir Eyre Coote again won victory for the British. In 1786 Lord Cornwallis succeeded Hastings as Governor-General. His rule is memorable chiefly for the war with Tippo Sultan of Mysore, which terminated in the Sultan having to surrender one half of his dominions to the British and their allies. Marquis Wellesley arrived in 1798 as the Governor-General and his policy eventually made the British power permanent in India from the Himalayas to Cape Comorin. Under him Tippo was completely overthrown by 1799 and Second Mahratta War concluded.

During Lord Bentinck's administration (1828-35) administrative reforms were the subject for consideration. During the period of Governor-Generalship of Marquis of Dalhousie (1848-56) a new war broke out with Sikhs and after their final defeat the Punjab was finaly annexed to the British Empire. This was followed by second Burmese war ending in the annexation of Pegu. The Indian States of Satara, Nagpur and Jhansi were also annexed to the British possessions between 1852 to 1856.

The administration of Lord Canning (1856-61) was distinguished for a short war with Persia and great Sepoy Mutiny. In 1857 Sepoy regiments all along the Gangetic plain mutinied against their officers and the British rule, the Moslems tried to restore the old dominion of the Mughals.

At Cawnpore all the British soldiers were slain. At Lucknow the garrison held out and endured a long seige till they were relieved first by Havelock and Outram, and then by the fresh troops from England led by Sir Colin Campbell. Because there was a great rebellion of mutineers at Delhi the British forces besieged the city and took it after some time. The Britishers now felt that it was time to end the government of India by a company of merchants and the direct sovereignty of India was vested in the British Crown. On 1st January, 1877, during the viceroyalty of Lord Lytton, Queen Victoria was proclaimed Empress of India at Delhi. Lord Hardinge became viceroy in 1910 and 1911 King George V visited India, when Delhi, instead of Calcutta, became the capital of India.

When the 1st World War began India entered the struggle with enthusiasm. But the Indian leaders naturally felt that their country's heroic part in the War should entitle her to independence, and in 1916 Indian National Congress, founded in 1885, passed a resolution claiming Home Rule for India. The Muslim League adopted the same resolution.

Gandhiji inspired the Congress to adopt the famous resolution on non-co-operation. This resolution envisaged boycott of British legislature, law courts, schools. The Congress adopted the creed to obtain Swaraj or self-rule by non-violent means. The Non-Co-operation Movement resulted in boycott of legislatures set up under Montagu-Chelmsford Reforms. Meanwhile the destruction of the Turkish Empire and deposition of Caliph created grounds for an agitation by the devout muslims. A Khilafat Movement combined with Congress in its Non-Co-operation movement, but violence broke out at Chourichoura in U.P. and so the mass demonstration was called off. Deshbandhu Chittaranjan Das and Pt. Motilal Nehru formed a Swarajya Party to wreck the reforms from within the legislatures. In 1923 communal tension broke out in several places and the Muslim League was revived next year. The boycott of the Simon Commission gave an opportunity for alliance but its refusal to accept claims put forward for the muslims by Mohammed Ali Jinnah at the All-Party Conference held in 1928 led to the holding of an All-Party Muslim Conference and the formulation of claim which became famous as Jinnah's 'fourtenn points.' 'Both the All-Party Conference and the Congress agreed to accept dominion status by 31st December, 1929 despite the declaration in 1929 at Lahore that the Congress desired to achieve complete independence. On 31st December, 1929. Pandit Jawaharlal Nehru, President of the Lahore Session of the Congress, declared the aim as complete independence. It was decided to celebrate this declaration of independence on the 26th January of 1930 and since then it was celebrated each year and since 1951, 26th January is being observed as Republic Day of India.

A mass Civil Disobedience movement was started by Gandhiji on 6th April, 1930 with his famous march to Dandi. The then Government withdrew all repressive measures and released all political prisoners. Congress in response abandoned the movement and agreed to join the Round Table Conference after the Gandhi-Irwin Pact was signed on 4th March, 1931. Gandhiji represented the Congress as its sole representative and could not agree on the communal question, as a result of which Communal Award was announced providing separate electorates for the depressed classes. Civil Disobedience movement continued up to May 1934, when the Congress decided to work within the framework of the Govt. of India Act of 1935. After the elections of 1937 Congress Ministries were established in 7 out of 11 provinces. A left-wing force however emerged by this time and Subhas Chandra Bose defeated Gandhiji's nominee Pattavi Sitaramayya for the Presidency of Congress held in Tripuri. Subhas Chandra Bose was forced to resign by the Congress High Command and he formed a new party, the Forward Bloc, which gained immense popularity.

By 1939 Second World War started and the Congress refused its co-operation in a war which was conducted on imperial lines. The Communist Party of India however, offered their co-operation accepting the war as a People's War.

Sir Stafford Cripps was sent to India whose plan was nothing but a repeatation of an earlier offer, and this was not therefore accepted. In 1940, Jinnah placed his demand for a separate Muslim State of Pakistan, which gave the Government a handle to refuse all Congress proposals for setting up an Indian National Government.

In August 1942 the Congress adopted the famous Quit India resolution and as soon as it was passed, the Government declared that Congress was illegal and arrested all its leaders.

Subhas Chandra Bose was not in India at that time. He escaped from India in January 1941 and made contacts with Germany and Japan. When the Japanese reached the frontier of India, a large number of Indian soldiers fell prisoners into their hands. An Indian National Army was organised by Rash Behari Bose with Subhas

Chandra as its Netaji—Supreme Leader. He inaugurated the Government of Free India at Singapore and in 1943 his army advanced with the Japanese soldiers up to Kohima and actually touched a part of India. The Indian National Army surrendered to the British after the collapse of Japan, and a number of its officers were tried for treason. On 18th February, 1946, the ratings of the Royal Indian Navy rose in an open mutiny which took a very serious turn within a short time.

On 19th February, 1946, the then British Prime Minister, Clement Attlee announced a Mission to India of some members of his Cabinet, which arrived in India in March, 1946. A serious of discussion with Congress and Muslim League leaders could not bring an agreement and on 16th May, 1946 the Cabinet Mission announced its own recommendations. These proposals were accepted by the Muslim League but were rejected by the Congress. The Cabinet Mission left India on 29th June. Muslim League demanded that the Viceroy constitute the provisional Government even without Congress, but that was not possible. The League then withdrew their acceptance of the Mission's proposals ; the Viceroy reconstituted the Council Members. The Muslim League declared 16th August, 1946, as Direct Action Day. On that day a large number of Hindus and Muslims in Calcutta were butchered and their property looted and destroyed, and Calcutta became the scene of one of the most brutal communal killing.

On 20th February, 1947, the British Government declared its intention to quit India by June 1948 and appointed Lord Mountbatten as Viceroy.

On 3rd June, the British Government's new policy was broadcast by the Viceroy, which envisaged division of the country and transfer of power by 14th August, 1947. This scheme was accepted by both the Congress and the Muslim League and the Indian Independence Act was passed through the British Parliament on 1st July, 1947. On 15th August, 1947, the Constituent Assembly in Delhi declared India a Dominion within the British Commonwealth, with Lord Mountbatten as its first Governor-General. Md. Ali Jinnah was chosen as the first Governor-General of Pakistan in Karachi. The British Indian Empire was finally liquidated from 15th August, 1947.

The princely States were connected with the Government of India only through their feudal dependence upon the British Crown. On the advice of Lord Mountbatten most of the States agreed on 25th July, 1947 to accede to the Indian Union or in the case of States in Pakistan territory, to Pakistan. Muslim League, of course, encouraged the princely States to declare their right to independence. The Nizam of Hyderabad, a State with predominantly Hindu population opposed to the accession to India. Indian troops marched into Hyderabad in September 1948 and the State acceded to the Indian

Union. In the State of Jammu and Kashmir a critical situation developed. The Hindu Maharaja whose major subjects were Muslims, could not make up his mind. On 22nd October, 1947, Pathan tribesmen well-armed with rifles, machine guns, mortars and artillery, crossed the western border of Kashmir with the moral support of Pakistan. The Maharaja appealed to India for help and offered to accede to the Indian Union and Indian troops were flown in. On 31st December, India placed the question of Kashmir before the Security Council of the U.N. and a cease fire agreement was signed by the Governments of India and Pakistan in January 1949.

From 1950 until his death on 27th May, 1964 it was the personality of Jawaharlal Nehru which gave India solidarity and strength. After the new Constitution was framed and came into force in 1950, India became a republic, though retaining her links with the British Commonwealth.

In October 1962, the Chinese attacked India's North-East Frontier Agency (now Arunachal Pradesh) and after a short campaign left the Indian soil. The Chinese are now in possesion of 36,260 sq. km. of Indian territory in Ladakh and 5,180 sq. km. in the NEFA (now Arunachal Pradesh) areas.

The dispute with Pakistan entered a new phase when it was discovered that quite a large number of Pakistanis invaded Kashmir in disguise on 5th August, 1965. The Indian security force started mopping-up operations. On 27th August, regular Pakistani troops crossed the cease-fire line. On 1st September, they launched a severe attack with two regiments of Patton tanks and Sabre jet-fighters in the Chenub sector and entered a few miles within Jammu. The question was taken up by the Security Council of UN, which passed a resolution asking both the parties to cease hostilities which resulted in a cease-fire on 23rd September. Mr. Alexi Kosygin, Prime Minister of USSR, arranged a meeting between the Prime Minister of India, Lalbahadur Shastri and the President of Pakistan, Md. Ayub Khan early in January 1966 at Tashkent. Shastri died of heart attack on 11th January immediately after signing an agreement. He was succeeded as Prime Minister by Pandit Nehru's only daughter Mrs. Indira Gandhi on 24th January, 1966.

Mrs. Gandhi took bold steps in nationalizing major banks, abolishing privy purse and the special privileges enjoyed by the ex-rulers.

On Aug. 9, 1971 India and the Soviet Union signed a 20-year treaty of peace and friendship.

Pakistan launched a war on India on Dec. 3, 1971. She attacked several airfields in the western sector. On the same day Indian troops started crossing the border of Bangladesh (then East Pakistan) in concert with the Liberation Force (Mukti Bahini) there. On Dec. 6 India recognised Bangladesh. On Dec. 16 Pakistan's Eastern Army

Commander unconditionally surrendered at Dacca. On the same day India announced a unilateral ceasefire on the Western Front. On July 3, 1972 an agreement was signed by Prime Minister Mrs. Indira Gandhi and President Z. A. Bhutto at the end of summit talks held in Simla. Under the terms of the agreement it was agreed, besides the other clauses, that all Indo-Pakistan disputes would be settled by peaceful means through bilateral negotiations.

India carried out an underground nuclear explosion in the Rajasthan desert on May 18, 1974.

Sikkim became a full-fledged State of India in April 1975.

A state of emergency was declared in the country on 26 June, 1975.

India : The Country

PHYSIOGRAPHY—India, also known as *Bharat*, is located in a southern peninsula of the Asian continent. Lying entirely in the northern hemisphere, India covers an area of 3,280,483 sq. km. It measures about 3,219 km. from north to south and about 2,977 km. from east to west. It is the seventh largest and the second most populous country in the world. With a land frontier of 15,200 km. and a coastline of 5,700 km., India may well be called a sub-continent.

India lies to the north of the equator, between 8°4′ to 37°6′ north latitude and 68°7′ to 97° 25′ east longitude. In the north, India is separated from China, by the Himalayas. Situated between the two countries is Nepal, and to its east, Bhutan. Mountains also separate India from Burma on India's eastern border. Bangladesh is wedged in between the Indian States of Assam and West Bengal. In the north-west lies Pakistan. In the south, the country stretches crossing the Tropic of Cancer and forming into a peninsula with Arabian Sea to the west and Bay of Bengal to the east. On the southern tip of the country lies Sri Lanka.

MOUNTAINS—India has several principal mountain ranges : the Himalayas, the Patkai and other ranges in the north-east, the Vindhya, the Satpura, the Aravalli and the Eastern Ghats.

The Himalayas, the highest mountain system of the world, extend almost uninterruptedly for a distance of 2,500 km. and cover about 500,000 sq. km.

While the Himalayas are the highest mountain of the world, the Aravalli is the oldest. The present Aravalli has lost its range character in many parts and is now a relic of its past.

The 'weathered products of the ancient Aravalli range were ultimately deposited in the Vindhyan sea to form the Vindhya range and plateau. It traverses nearly the whole width of peninsular India, a distance of about 1,050 km.

The Satpura mountain system rises south of the Vindhya and is more or less parallel to it. It extends from Ratanpur on the west to Amarkantak on the east, a distance of 900 km. The total mountain area is 75,000 sq. km.

PLATEAUS—Most of the surface of India has developed a plateau character. Malwa and Vindhya plateaus of Central India about against the Vindhya range on the south and slope northwards. The Sone river separates the Vindhya plateau from its southern neighbour, the Baghelkhand plateau. The latter is bordered on the north by the Sonpur hills. Farther east lies the Ranchi, Hazaribagh and Kodarma plateaus. These are collectively known as the Chota Nagpur plateau.

The Satpura contains a number of high plateaus south of the Narmada river. Of these the names of the Betul plateau and the Maikala plateau deserve special mention.

South of the Tapti-Purna and west of the Wainganga-Pranhita-Godavari stands the largest plateau of India, the Deccan. It covers 700,000 sq. km. It may be subdivided into three broad sections—Maharashtra, Karnataka and Telengana.

PLAINS—The plains of India cover more than a million sq. km. and are extensively cultivated and densely populated wherever water is available. Most of the rivers in the Himalayas have built up plains in high altitudes and subsequently dissented them into terraces. The Indus in Kashmir, the Sutlej in the Punjab Himalaya, and the Ganga in the Kumaun Himalaya enter into such terraced plains at a number of places. Small alluvial cones have also been built up by tributary streams in the Himalayan region. The lacustrine and glacial plains in the Himalayas and other mountains are the other types of mountain plains. The plains at the foot of the Himalayas are examples of piedmont plains. On west of the Aravalli, there are rocky arid plains. Lava plains occur on the Konkan coast. Pediplains, resulting from the recession of hills, are widespread in South India. Coastal plains of emergent type with lagoons and backwaters are seen on both the coasts.

PHYSIOGRAPHIC DIVISIONS—Although in India the three major landforms—mountains, plateaus and plains—occupy distinct tracts of the country, yet within a large frame, there are many deviations from the norm. Accordingly to the scientific study of physiographical division of India, India has seven major Physiographic Divisions as follows :—

NORTHERN MOUNTAINS—The topography of the Himalayas has no parallel in the world. The north-eastern mountains have Appalachian features. The Kali river limits the Western Himalayas in the east, whereas the high transverse range, Singalila, marks the western limit of the Eastern Himalayas. The Western Himalaya is subdivided into four regions—the North Kashmir Himalaya, South Kashmir Himalaya, Punjab Himalaya and Kumaun Himalaya, from west to east. The western part of the Eastern Himalayas includes the Sikkim Himalaya, Darjeeling Himalaya and Bhutan Himalaya. The remaining portion of the Eastern Himalaya is embraced by the Assam Himalaya.

GREAT PLAINS—The Great Plains of India are stretched in front of the largest aggradational plains. They are stretched in front of the Himalayas, fanning out at both ends, so as to include the Ganga delta on the east and Rajasthan arid and semi-arid plains on the west. The central and eastern part of the Great Plains have been built up by the Ganga and its tributaries. The Punjab Plains occupy the western part of the Great Plains where the tributaries of the Indus flow in a south-westernly direction in contrast to the south-east flowing Ganga and its tributaries. Arid conditions have set in over the southern part of Punjab and continue more forcefully in West Rajasthan, which though originally a part of the Indo-Ganga Plains, is passing today through a different landscape cycle: this section forms the Western Arid Plain. The Great Plains are an alluvium-filled trough, the depth of which varies from place to place. The total area of the Great Plains is 652,000 sq. km. of which one-third lies in the arid western Rajasthan. Another one-third lies in Uttar Pradesh ; and three other States, Punjab, Bihar and West Bengal, have more or less equal shares.

CENTRAL HIGHLANDS—The Central Highlands with their two border ranges and many scraps exemplify the influence of rocks on topography. A wide belt of hilly country bordered on the west by the oldest tectonic mountain of India and on the east by a great escarpment, constitutes the Central Highlands, which separate the Great Plains of North India from the plateaus and coastal plains of the Deccan. About one-half of Madhya Pradesh, one-third of Rajasthan and a small porion of Uttar Pradesh lie in this physiographic divisions. It forms a compact block of mountains, hills and plateaus, interspersed with valleys and basins covering about one-sixth of India's total area. Most of it is forested and is the homeland of aboriginal tribes.

PENINSULAR PLATEUS—The Peninsular Plateaus form one of the world's largest stable landmasses. They constitute the largest physiographic division, facing the Bay of Bengal in the east and the Arabian Sea in the west. Its maximum length from Panchmarhi on the north to Cape Comorin on the south is 1,600 km. and the maximum width from the Sahyadri on the west to the Rajmahal hills on the east is 1,400 km. It is triangular in shape with its apex near Broach and its base extending from the southernmost point of India to Rajmahal in Bihar along the Eastern Ghats. The two other sides of the triangle run along the Sahyadri and the Satpura range. The Peninsular Plateus consist of five sub-divisions : Western hills, North Deccan Plateau, South Deccan Plateau, Eastern Plateau, and Eastern hills.

EAST COAST—Extends from Cape Comorin northward to the united deltas of the Krishna and Godavari for 1,100 km. with an average width of 100 to 130 km. Farther north, the hills come down almost to the coast. The coastal plains again widen to the north of Berhampur and extend to the Chilka Lake, the delta of the Mahanadi, and the Balasore coastal plain, where they merge into the Ganga deltaic plains. There are a number of lagoons and backwaters, some of which are linked up by the Buckingham Canal. The seaward fringe of the coast is in general swampy and sandy, and that makes it uninhabitable.

WEST COAST—The plains on the West Coast are confined to a narrow belt behind which rise the Sahyadri extending for 1.500 km. from Cape Comorin in the south to Surat in the north, the width ranging from 10 to 25 km. At the northern end are two peninsulas, which have been sub-divided into three areas—the Konkan coast, Karnataka coast and Kerala coast.

BORDERING SEAS AND ISLANDS—India has a number of islands within her territory both in the Bay of Bengal and the Arabian Sea, which encircle the coasts of India. Those in the Bay are much larger and more habitable.

The main island groups in the Bay of Bengal are the Andaman and Nicobar Islands and in the Arabian Sea the Lakhshadweep Islands (see Index). There are two other islands out-side these groups. One is the Barren Islands about 140 km. north-east of Port Blair, and the other is the Narcondam Island, about 150 km. north-east of the Barren Islands. These two Islands are the only volcanoes within Indian territories.

CLIMATE—India has a great diversity of climates with many striking contrasts of meteorological conditions characteristic of the Tropics as well as the temperate zone. Broadly speaking, the climate of India is controlled by two seasonal winds or monsoons. Of these, the south-west or summer monsoon blows over thousands of miles of warm ocean before it strike India at about the beginning of June, to bring 90 per cent of all the rains that fall. Rajasthan and several parts of the country get only a faw inches a year. Bombay gets more than 60″ and Cherrapunji in Meghalaya 470″.

By the end of September, the south-west monsoon begins to retreat and by the beginning of January, the north-west monsoon from the land blows steadily over India, the Bay of Bengal and the Arabian sea. During the four months of the year there is scarcely a place in India outside the Himalayas which receives a single inch of rain.

The climatic regions of India, i.e., according to rainfall, are as follows:—

(1) regions with more than 80 inches of annual rainfall, such as the West Coast, West Bengal and Assam, (2) regions with 40 to 80 inches of rainfall, such as the north-east plateau and the middle Ganga valley, (3) regions with 20 to 40 inches of rainfall, such as Tamil Nadu, southern and north-western Deccan and the upper Ganga plain. To these may be added the Himalayan region with heavy rainfall.

The Meteorological Department of India recognises four seasons —(1) Cold weather season (December-February); (2) Hot weather season (March-May); (3) Rainy season (June-September); and (4) season of the retreating south-west monsoon (October-November).

SOIL OF INDIA—The Indian soil may be mainly classified under four different heads—(1) *alluvial soil* (2) *black soil* (3) *red soil* and (4) *laterite soil.*

Alluvial soil is formed by the silts brought by the rivers every year and deposited on their banks. It is very fertile and covers greater part of the northern India between the foot of the Himalayas and the northern slopes of the Vindhyas and extends in a narrow fringe round the coastline of the peninsula. Territorially, they occupy Punjab, Uttar Pradesh, Bihar, West Bengal, parts of Assam and Orissa and also the coastal regions of southern India. The whole of the Indo-Gangetic plain is comprised in this area.

Black soil or black cotton soil is best suited to deep-rooted crops, notably Indian strains of cotton. The black soil covers the greater part of Maharashra and Gujarat, western part of Madhya Pradesh and Hyderabad and some parts of Tamil Nadu. Black cotton soil is exceedingly compact and tenacious and sticky when wet. The water-holding capacity of this soil is good.

Red soil covers the whole of Tamil Nadu, Karnataka and south-east Maharashtra, east of Hyderabad and Madhya Pradesh to Orissa and Chota Nagpur. Northward the red soil extends into the greater part of the Santhal Parganas and the Birbhum district of West Bengal, the Mirzapur, Jhansi and Hamirpur districts of Uttar Pradesh, Baghelkhand States of Central India, the Aravalli and the eastern half of Rajasthan.

Laterite soil is derived by the atmospheric withering of several types of rocks under monsoon conditions of alternating dry and wet periods. This soil is found on the summit of the hills of the Deccan, Madhya Pradesh and of the Rajmahal hills and Eastern Ghats and in certin parts of Orissa, Maharashtra, Malabar, West Bengal and Assam.

RIVER SYSTEM—The total available volume of flow from India's river is assessed at 1,683,000 million cubic metres per year. There are in India three principal watersheds. The Great Himalaya along with its Karakoram branch forms a watershed in the north ; the Vindhya range in Central India, strengthened by the Satpura-Maikala forms the second principal watershed ; the Sahyadri is the third watershed which directs the course of most of the Deccan rivers.

Rivers in India are of four major types : Himalayan rivers of Central India and the Deccan, coastal rivers, and rivers flowing into interior drainage basins. The Himalayan rivers are generally snow-fed and continue to flow throughout the year. The rivers of Central India and the Deccan are generally rain-fed, and their volume of water fluctuates throughout the year. Coastal streams, specially in the west have limited catchment-areas. Most of the streams of the interior drainage basins are of an ephemeral character. They drain towards the individual playa basins or salt lakes like the Sambhar, or are completely lost in the sands and have no outlet to the sea.

The Indus, the Ganga and the Brahmaputra are the main rivers of the Himalayan system. Perennially fed by melting snow of the Himalayas they have continuous flow throughout the year. Most of the tributaries rise in the Himalayas and are, for a considerable length of their courses, mountain torrents.

(1) The three great Himalayan rivers are :—(a) *Indus* river with its five tributaries— *Jhelum*, *Chenab*, *Rabi*, *Beas* and *Sutlej*—waters Punjab and Haryana. The source of the Indus is on the northern slope of Mount Kailas in Tibet. For the first 500 miles of its course it flows through deep gorges in the Himalayas, after which it turns south-west and descends on the plains. Thereafter, the river flows south to Sind and falls into the Arabian Sea. India possesses very little of the Indus basin. (b) *Ganga*—The main head-water of the Ganga is the *Bhagirathi*. Its source at Gaumukh, an ice-cave, is taken to be the source of the Ganga as well. Sweeping westwards of 35 km. from its source, the Bhagirathi turns south, cuts through the Great Himalayas in a deep valley, and flowing for another 140 km. through the Lesser Himalayas receives another principal afluent the *Alakananda*, at Devaprayag. The Alakananda rises from a glacial snout of the Alakapuri glacier, just behind Bad-

rinath town, and rushes as a mountain torrent until its course is blocked by ice-avalanche. The river continues to flow beneath the ice. After its exit from the ice barrier, the Alakananda runs through a valley curved out of tectonic ridges. At Rudraprayag it meets the south-flowing Mandakini which has its source in Gaurikund and is fed by the melted water of the Ghorabari glacier descending from the Kedarnath peak. The combined rivers then take the name of Ganga. Flowing south for 70 km. and cutting through two ranges, the Nag Tibba and the Siwalik, the Ganga descends on the plains at Hardwar. Instead of flowing directly south, the river turns 'east in a great arc and flows across Uttar Pradesh and Bihar. During its easternly course, it collects the waters of Jamuna, Gumti, Ganga, Sarda, Gandak, Sone and Kosi. Near the Rajmahal hills in Bihar it swings south-east into West Bengal. Thereafter, it splits into several branches and meets the Bay of Bengal. (c) *Brahmaputra* rises from the snout of the Chemayungdung glacier near the Tachhog Khabab Chhorten, about 100 km. south-east of the Manassarovar. Running due east for nearly 800 miles in Tibet under the name Tsangpo, it cuts the south into Indian territory. Joined by the Dibang and the Lohit, the united stream takes the name of Brahmaputra. It rolls due west through the narrow Assam valey which is 500 miles long and 50 miles wide. Turning towards south-west at Goalundo in Bangladesh it forges ahead to join the easternmost mouth of the Ganga—the *Padma*. Before the combined waters fall into the Bay of Bengal, they are joined by several other rivers, the most important amongst them being the *Meghna* in Bangladesh.

(2) *Rivers of the Deccan system*—These rivers rise among the hills of the Deccan plateau and are fed only by the monsoon rains, so that in the dry season some of them become almost waterless. The Deccan system falls under three categories—east-flowing rivers, west-flowing rivers and those which flow north and empty themselves into Gangetic river system, (a) The three important east-flowing rivers are the *Godavari*, *Krishna* and *Cauvery*, which rise in the Western Ghats. They follow the slope of the plateau, cut deep into it and fall into the Bay of Bengal. The *Mahanadi* and the *Damodar* are two other important east-flowing rivers. (b) The west-flowing rivers are the *Sharavati*, *Netravati*, *Cheliyar*, *Pennani* and *Periyar*, all of which rise in the Western Ghats and fall into the Arabian sea. (c) The north-flowing rivers gradually slope towards the north Indian plain, the most important of which is the *Chambal* which feeds the *Jamuna* and the *Sone* which join the Ganga near Patna. But the two biggest rivers are the *Narmada* and the *Tapti*, which flow west-ward and fall into the Arabian Sea.

The drainage basins of India vary in size to a great extent. The Ganga basin,the largest, receives waters from an area of about 838,200 sq. km.—about a quarter of India's total area. The second largest is the basin of the Godavari. It covers an area of about 523,800 sq. km.

(about 10% of India's total area). The basins of the Brahmaputra in the east and that of the Indus within Indian territory are nearly equal in area—285,000 sq. km. and 285,300 sq. km., respectively. The Krishna basin is the second largest in Peninsular India, with an area of about 271,300 sq. km. The Mahanadi in Orissa flows through the third largest basin in the peninsula—192,200 sq. km. The basin of the Narmada (94,500 sq. km.) in the north and the Cauvery (94,400 sq. km.) in the south are nearly equal in area.

RACES—India's 547,949,809 people constitute 1/7th of the human race. Her population, second only to that of China, is made up of many racial strains.

Indian races were divided into seven broad groups by Sir Herbert Risely, such as *Mongoloid*, *Indo-Aryan*, *Dravidian*, *Mongolo-Dravidian*, *Aryo-Dravidian*, *Scytho-Dravidian* and *Turko-Iranian*.

Next classification was made by Dr. J. H. Hutton in 1933 based on race-cum-languages and cultural sequence. According to this theory, all people came to India from outside, such as—

(1) *Negritos* from Africa—the oldest people to have come to India, now surviving in the Andaman Islands and in Malaya. Traces of them seem to occur among the Nagas and the certain tribes in South India.

(2) *Proto-Australoids*—who came from the East Mediterranean area.

(3) *Early Mediterranean*—who brought earlier forms of the Austric speech.

(4) *Civilised or Advanced Mediterraneans*—who became Dravidians in India.

(5) *Armenoids*—a specialised offshoot of the standard Alpine stock probably came with the civilised Mediterraneans (Dravidians) and spoke their language.

(6) *Alpines*—found in Gujarat and Bengal ; earlier than Vedic Aryans but probably speaking Aryan dialects.

(7) *Vedic Aryans or Nordics*—who brought the Vedic Aryans (Sanskrit) speech.

(8) *Mongoloids*—not important for the greater part of India, as they touched only the northern and eastern fringes.

The most recent and authoritative classification divides the people of India into six main races with nine sub-types :—

(1) *Negrito*—is now almost extinct in India. A small group is the Kadars and Palayans of Cochin and Travancore Hills, Irurals of still surviving in the Andamans, and its traces have been found among the Wynad, the Angami Nagas of Assam and Nagaland and some of the Rajmahal tribes like the Semangs of Malaya and the Papuas of New Guinea, hill-tribes of Bihar. They are related to the Asian and Oceanic but not to the African Negroes and Negritoes.

(2) *Proto-Australoids*—are related genetically to the Australians as well as the Europeans. They survive in a good many aboriginal peoples of the present-day India, although more or less mingled with other

peoples. The majority of the tribal peoples of central and southern India belong to this group. Throuhout the greater part of India, the Proto-Australoids peoples still lives as the lower castes of sections of the Indian people.

(3) *Mongoloid Group*—is found in the mountainous zones of north and northern India. This group is divided into : (a) *Palaeo-Mongoloids* consisting of long-headed and broad-headed types. They form a dominant element in the tribes in Assam and on the Indo-Burmese frontier and among the less primitive types in Burma and in Chittagong in Bangladesh ; (b) *Tibeto-Mongoloids* are found in Sikkim and Bhutan. Their physical characteristics are : short and broad face with high cheek bones, a skin fold from the upper eyelid covering usually the inner eyecorner, giving the eye a slit and oblique appearance, scanty hair on face and body, and light-brown skin with an yellowish tint.

(4) *Mediterranean Group*—consists of (a) *Palaeo-Mediterranean*, medium-statured, dark-skinned and slight-built, found in Kannada, Tamil and Malayalam tracts ; (b) *Mediterranean*, true European type found in Punjab and in the upper Gangetic valley and is supposed to represent civilised pre-Aryan Dravidian people of northern India, who contributed largely to the evolution of Hindu people and culture of North India ; (c) *Oriental* type, sometimes called Semetic or Jewish, found in Punjab, Sind, Rajasthan, western U.P. and in some other parts of India.

(5) *Western Brachycephals*—consists of (a) *Alpinoid*, (b). *Dinarik* and (c) *Armenoid*. They seem to have evolved in the Central Asian mountain regions. Both Alpine and Dinarik varieties appear to have spread over the greater part of India, i.e., Bengal, Orissa, Kathiawar, Kannada and Tamil countries, Gujarat, West Coast of India, excepting Malabar. The Parsis of Bombay are allied to Armenoids.

(6) *Nordics*—are the Aryan-speaking group of India, who are largely responsible for India's Hindu civilization and seem to have come from the Eurasian steppe lands and entered India during the second half of the second millennium B.C. The Nordic elements are strong in North-West Frontier of India and in the south of Hindu-Kush range. They are present in mixed form in Punjab, Kashmir, Rajasthan and in the upper Gangetic valley. They are also found among higher castes and groups. Nordic type also predominates in certain sections in India.

RELIGION—According to 1971 census, of 547 million people of India, 82.72 p.c. are Hindus, 11.21 p.c. Muslims, 2.60 p.c. Christians, 1.89 p.c. Sikhs, 0.70 p.c. Buddhists and 0.47 p.c. Jains.

LANGUAGES—The Constitution of India accepts 15 regional languages. In addition, there are also English language and about 250 regional dialects in India. (For details, see *Languages*).

SYSTEM OF NOTATION—The Indian numerical notation system differs from the European. Large numbers are punctuated as crores and lakhs and not in hundreds, thousands and million. A *lakh* is one hundred thousand (written as 1,00,000) and a *crore* is one hundred lakhs or ten million (written as 1,00,00,000). (See *Currency & Exchange*).

CURRENCY—The principal unit of currency in India is the Rupee of 100 Paise. (See *Currency & Exchange*).

Geographical Information

CONTINENTS

	Area (sq. m.)		*Area (sq. m.)*
Africa	11,506,000	Europe ...	3,745,000
Asia	16,988,000	Antarctica ...	5,500,000
Australia	2,968,000	North America ...	9,390,000
South America ...	6,795,000		

OCEAN AND SEAS

Oceans	*Area (sq. m.)*	*Greatest Depth (ft.)*	
Pacific	64,186,300	30,246	(Poerto Rico Trench)
Atlantic	33,420,000	30,246	(Poerto Rico Trench)
Indian	28,350,500	26,400	(Diamantina Trench)
Arctic ...	5,105,700	17,880	(Eurasia Basin)
Seas			
Carribbean Sea ...	971,400		
Mediterranean Sea ...	969,100		
South China Sea ...	1,148,500		

RIVERS

		Length (m.)		*Length (m.)*
Nile	(Africa)	4,145	Lenea (Europe) ...	2,680
Amazon	(Brazil)	4,000	Niger (Africa) ...	2,600
Yangtse	(China)	3,400	Yenisey (Siberia) ...	2,566
Mekong	(Vietnam)	2,600	Missouri (N. America)	2,533
Congo	(Africa)	2,718	Mississippi (N. America)	2,348
Amur	(USSR) ...	2,700		

OF EDUCATION FOR

LAKES

	Area (*sq. m.*)
Caspian Sea (U.S.S.R.—Iran) ...	143,550
Superior (N. America)	31,820
Victoria-Nyanza (Africa) ...	26.828
Aral (U.S.S.R.) ...	25,300
Huron (N. America)	23,010
Michigan (N. America)	22,400
Baikal (U.S.S.R.) ...	13,300
Tanganyika (Africa) ...	12,700
Great Bear (N. America) ...	12,275
Nyasa (Africa) ...	11,430
Great Slave (N. America) ...	10,980

MOUNTAIN PEAKS

	Height (*ft.*)
Everest (Nepal-Tibet)	29,028
Godwin-Austen or K² (India)	28,250
Kanchanjungha (Nepal-India)	28,208
Lhotse I (Nepal-Tibet)	27,923
Makalu I (Nepal-Tibet)	27,824
Lhotse II (Nepal-Tibet)	27,560
Annapurna I (Nepal-India)	26,926
Dhaulgiri (Nepal)	26,811
Manaslu I (Nepal)	26,760
Cho-Oyu (Nepal-India)	26,750
Nanga Parvat (India)	26,660
Gasherbrum (India)	26,470
Gosainthan (Tibet)	26,291
Annapurna II (Nepal)	26,041
Disteghil (India)	25,868
Himalchuli (Nepal)	25,801
Nuptse (Nepal-Tibet)	25,726
Masherbrum (India)	25,660
Nanda Devi (India)	25,645
Chomo Lonzo (Nepal-Tibet)	25,640
Rakaposhi (India)	25,550
Kamet (India-Tibet)	25,447
Tirich Mir (Pakistan)	25,230
Makalu II (Nepal-Tibet)	25,130

VOLCANOES

(Height in feet)

Active

Gaullatiri (Chile) ...	19,882
Laskar (Chile) ...	19,652
Cotapaxi (Equador) ...	19,347
Tupungatito (Chile) ...	18,504
Popocatepeti (Mexico)	17,887
Sangay (Equador) ...	17,159
Tungurahua (Equador)	16,512
Catacachi (Equador)	16,197
Purace (Columbia)	15,604
Klyuchevskaya (U.S.S.R.) ...	15,584
Tazumulco (Guatemala)	13,812
Mauna Loa (Hawaii) ...	13,680

Qntescent

Llullaillaco (Chile) ...	22,146
Kilimanjaro (Tanganyika)	19,340
Misti (Peru) ...	19,031
Cayambe (Equador) ...	18,996
Pichincha (Equador) ...	15,696
Fujiyama (Japan) ...	12,388

Extinct

Aconcagua (Argentina)	22,834
Chimborazo (Equador)	20,561
Demavend (Iran) ...	18,934
Elbruz (U.S.S.R.) ...	18,481
Orizaba (Mexico) ...	17,701

ISLANDS

	Ocean	Area (sq. m.)		Ocean	Area (sq. m.)
Greenland	Arctic	840,000	Honshu	Pacific	88,919
New Guinea	Pacific	347,450	Great Britain	Atlantic	88,745
Borneo	Pacific	307,000	Victoria	Arctic	80,450
Baffin	Arctic	236,000	Java	Pacific	48,763
Madagascar	Indian	227,737	Cuba	Atlantic	44,206
Sumatra	Indian	161,012	Newfoundland	Atlantic	42,750

WATERFALLS

By height (Single leap)	*Feet*
Angel (Venezuela)	2,648
Ribbon (California, U.S.A.)	1,612
King George VI (Guyana)	1,600
Upper Yosemite (California, U.S.A.)	1,430
Gavarnie (Pyrenees, France)	1,385
Tugela (Natal, S. Africa)	1,350
Glass (Brazil)	1,325
Takakkaw (Br. Columbia, Canada)	1,200
Wollomombi (N.S.W., Aus.)	1,100
Jog Falls (Karnataka, India)	960

By volume of water	*Thousands of gallons per second*
Guaira (Brazil)	2,900
Khone (Laos)	2,500
Niagara (U.S. Canada)	1,300
Paulo Affonso (Brazil)	600
Urubupunga (Brazil)	600

DESERTS

	Area (sq. m.)
Sahara (N. Africa)	3,500,000
Libya (N. Africa)	650,000
Great Australian (W. Australia)	600,000
Arabian (Arabia)	500,000
Gobi (Mongolia)	400,000
Rub'al Khali (part of Arabian Desert)	250,000

	Area (sq. m.)
Kalahari (Bechuanaland)	200,000
Great Sandy (part of Australian Desert)	160,000
Takla Makan (S. Sinkiang, (China)	125,000
Kara Kum (S. W. Turkistan, U.S.S.R.)	105,000
Thar (N. W. India)	100,000

GEOGRAPHICAL SURNAMES

Islands of Pearls—Baharein (Persian Gulf).
World's Loneliest Island—Tristan da Cunha (Mid-Atlantic).
Roof of the World—Pamir.
Holy Land—Palestine.
Island of Cloves—Zanzibar.
Empire City—New York.

Key of the Mediterranean—Gibraltar.
Rose-pink City—Jaipur.
Whiteman's Grave—Guinea coast of Africa.
Sugar Bowl of the World—Cuba.
Windy City—Chicago.
Venice of the North—Stockholm.
Forbidden City—Lhasa.
Land of Cakes—Scotland.
Granite City—Aberdeen.
Eternal City—Rome.
Gift of the Nile—Egypt.
Land of Rising Sun—Japan.
Land of Midnight Sun—Norway.
Land of Morning Calm—Korea.
Hermit Kingdom—Korea.
Playground of Europe—Switzerland.
City of Seven Hills—Rome.
Queen of the Adriatic—Venice.
Gateway of India—Bombay.
Garden of India—Bangalore.
City of Palaces—Calcutta.
City of Skyscrappers—New York.
Dark Continent—Africa
Emerald Isle—Ireland.
Land of Maple—Canada.
Bengal's Sorrow—Damodar River
Never Never land—Vast prairies of northern Australia.
Land of Golden Fleece—Australia.
Cockpit of Europe—Belgium.
Land of Thousand Lakes—Finland.
City of Magnificent Distances—Washington D.C.
China's Sorrow—Hwang-Ho.
Gate of Tears—Strait of Babel-Mandeb.
Pearl of the Antilles—Cuba.
The Down Under—Australia.
Herring Pond—Atlantic Ocean.
Great White Way—Broadway (New York City).
City of Dreaming Spires—Oxford.
Garden of England—Kent (Eng.)
Britain of the South—New Zealand.
Blue Mountain—Nilgiri Hills.
City of Golden Gate—San Francisco.

GEOGRAPHICAL RECORD-BREAKERS

Largest Continent	Asia, 16,988,000 sq. m.
Smallest Continent	Australia, 2,968,000 sq. m.
Largest N. to S. Stretch of Land	America.
Largest Ocean	Pacific, 64,186,300 sq. m.
Lowest Body of Water ...	Dead Sea.
Deepest Place in the Ocean ...	Off the Island of Marianas Trench, Philippines, where sounding of 36,198 ft. has been reached.
Highest Mountain System ...	Himalayas.
Longest Mountain System ...	Andes.
Highest Extinct Volcano ...	Aconcagua (Argentina), 22,834 ft.
Hightest Active Volcano ...	Guayatiri (Chile), 19,882 ft., last erupted in 1959.

Highest Dormant Volcano	Llullaillaco (Chile-Argentina), 22,058 ft.
Highest Plateau	Tibet.
Longest River	Nile, 4,145 miles.
Largest River (in volume)	Amazon.
Largest River Basin	Basin of Amazon, 2,720,000 sq. m.
Largest Freshwater Lake	Superior (U.S.—Canada), 31,800 sq. m.
Deepest Lake	Ozero Baikal (Siberia) ; average Depth : nearly 2,300 ft. Deepest part : 6,365 ft.
Largest Artificial Lake	Lake Mead at Boulder Dam (U.S.A.).
Highest Navigable Lake	Lago Titicaca (Peru—Bolivia). 12,506 ft. above sea-level.
Longest Straits	Malacca Straits between Malaysia and Sumatra (Indonesia), 485 m. long.
Largest Bay	Bay of Bengal, shoreline : 2,250 m.
Largest Gulf	Gulf of Mexico, shoreline : 3,100 m.
Largest Sea	Malay Sea between the Indian Ocean & the South Pacific, 3,144,000 sq. m.
Largest Inland Sea	Kaspiskoye More (Caspian Sea) (U.S.S.R.-Iran), 760 miles long and total area 143,550 sq. m.
Largest Peninsula	Arabia, 1,250,000 sq. m.
Biggest Desert	Sahara (N. Africa), 3,200 miles from east to west and 3,500,000 sq. miles.
Deepest Canyon	Hell's Canyon (U.S.A.), 7,900 ft. deep.
Deepest Cave	Gouffre Berger (France), 3,723 ft. deep.
Highest Capital City	La Paz (Bolivia), 11,916 ft. above sea-level.
Highest Town	Wenchuan (Tibet), 16,732 ft. above sea-level.
Largest Island	Greenland, 840,000 sq. miles.

Most Populous City	Tokyo, 8,893,094 (as on Oct. 1, 1965).
Densest Population	Monaco (37,687 per sq. m.).
Hottest Regions	North-West Sahara, Azizia (Libya), Death Valley (California) and Thar Desert of North-West India.
Coldest Regions	Verkhoyansk in N.W. Siberia, where temperature is 94°F below zero.
Largest Country	U.S.S.R., 8,649,550 sq. miles.
Smallest Country	Vatican City (108.7 acres).
Northernmost Town	Hammerfest (Norway), only 275 miles north of Arctic circles.
Largest Delta	Sundarban Delta in W. Bengal and Bangladesh ; 8,000 sq. m.
Highest Waterfall (Single leap)	Angel Falls (Venezuela), 2,648 ft.
Biggest Waterfall	Guaira (Brazil) ; average annual flow : 470,000 cu. ft. per sec.
Widest Waterfall	Khone Falls (Laos) with a width of 6.7 miles and a flow of 1,500,000 cu. ft. per sec.
Largest Atoll	Kwajalein, Marshall Islands (Central Pacific), with a 176 m. long coral reef enclosing a lagoon of 1,100 sq. m.
Longest Reef	Great Barrier Reef (Australia), 1,260 miles long.
Tallest Active Geyser	'Giant' in the Yellowstone National Park (U.S.A.), throwing a spare 200 ft. high.
Largest Archipelago	Indonesia, comprising 3,000 islands.
Highest Rainfall	At Mt. Waialeale, Hawaii Islands, 450 inches, 1912-58.

General Information

TOP CITIES OF THE WORLD

	Population		Population
Tokyo	8,893,094	Chicago	3,550,400
Greater London	8,190,000	Berlin	3,402,700
New York	8,070,000	Cairo	3,400,000
Calcutta	7,005,000	Djakarta	3,317,562
Shanghai	6,900,000	Lelingrad	3,300,000
Moscow	6,330,000	Rio De Jenerio	3,288,000
Bombay	5,968,546	Hong Kong	3,178,000
Mexico City	4,289,402	Madras	2,470,288
Buenos Aires	4,500,000	Manila	3,100,000
Peking	4,140,000	Tientsin	3,100,000
Sao Paulo	3,850,000	Paris	3,075,678
Delhi	3,629,842	Osaka	2,899,000

LONGEST RAILWAY PLATFORMS

	feet		feet
Kharagpur *(India)*	2,733	Sone *(India)*	2,415
Storvik *(Sweden)*	2,470	Bulaway *(Rhodesia)*	2,415

LONGEST RAILWAY TUNNELS

	m.	*yds.*		*m.*	*yds.*
East Finchley—Moden *(U.K.)*	17	880	St. Gotthard *(Switzerland)*	9	562
Simplon I & II *(Switzerland-Italy)*	12	559	Lotschberg *(Switzerland)*	9	140
			Hokuriku (*Japan*)	8	1,089

LONGEST BRIDGES

	feet		feet
Verrazona-Narrows (New *York*)	13,700	Forth *(Scotland)*	8,290
Lower-Zambezi *(Mozambique, Africa)*	12,064	Rio Salado *(Argentina)*	6,700
Storrsstrom *(Denmark)*	10,500	Golden Gate *(U.S.A.)*	6,260
Tay *(Scotland)*	10,290	Rio Dulce *(Argentina)*	5,860
Sone *(India)*	10,052	Hardinge *(Bangladesh)*	5,380
Godavari *(India)*	8,880	Victoria Jubilee *(Canada)*	5,320
		Moerdijk *(Netherlands)*	4,700
		Sarighat *(Assam, India)*	4,258

LONGEST DAM

Hirakud *(India)* ... 15.8 miles

HIGHEST DAMS

	feet		*feet*
Nurek *(U.S.S.R)*	1,040	Mica *(Columbia)*	794
Grand Dixence *(Switzerland)*	932	Bhakra*(India)*	742
Vaiont *(Italy)*	858		

LARGEST DAMS††

	Volume (Cubic yds.)		
Tarbela *(Pakistan)*	186,000,000	Oahe *(U.S.A.)*	92,008,000
Fort Peck *(U.S.A.)*	125,612,000	Mangla *(Pakistan)*	85,872,000

GREATEST RESERVOIRS

	Volume (acre ft.)		*Volume (acre ft.)*
Kariba *(Rhodesia)*	149,000,000	Manicouagan *(Canada)*	115,000,000
Bratsk *(U.S.S.R.)*	145,115,000	Portage Mountain *(Canada)*	62,000,000
High Aswan *(Egypt)*	127,000,000	Mangla *(Pakistan)*	45,000,000
Akosombo *(Ghana)*	120,000,000		

LARGEST HYDRO-ELECTRIC PLANTS

	Capacity (MW)
Grant Coulee *(U.S.A.)*	9,771
Guri *(Venezuela)*	6,500
Sayansk *(U.S.S.R.)*	6,400

LONGEST SHIP CANALS

	miles		*miles*
St. Lawrence Seaway *(U.S.A.—Canada)*	189	Volga—Moscow *(U.S.S.R.)*	80
Gota *(Sweden)*	115	Kiel *(Germany)*	61.3
Suez *(Egypt)*	100.6	Volga—Don *(U.S.S.R.)*	60
		Panama *(U.S.A.)*	50.7

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†† *Earthfil.*

NOTABLE TELESCOPES

Refractors

Name of Observatory & Location	Diameter in inches
Yerkas, Williams Bay, Wisconsin (U.S.)	40.0
Lick, Mt. Hamilton, California (U.S.)	36.0
University of Paris, Meudon (France)	32.7
Perkins, Delaware, Ohio (U.S.)	32.0
Astrophysical, Potsdam (Germany)	31.5
Alleghany, Pittsburg (U.S.)	30.0
Univ. of Paris, Nice (France)	30.0
Pulkova, Leningrad (U.S.S.R.)	30.0
U.S. Naval, Washington D.C. (U.S.)	26.0
Univ. of Virginia (U.S.)	26.0
Yale Univ., Canberra (Aus.)	26.0

Reflectors

Name of Observatory & Location	Diameter in inches
Hale, Mt. Palomar, California (U.S.)	200
Lick, Mt. Hamilton, California (U.S.)	120
Cremean Astrophysical (U.S.S.R.)	104
Mt. Wilson, Pasadena, California (U.S.)	100
Newton Royal (Great Britain)	98
Kitt Peak National, Arizona (U.S.)	84
McDonald, Mt. Locke, Texas (U.S.)	82
Tautenberg, Thuringen (Ger.)	80
Saint Micheal, Basses Alpes (France)	77
David Dunlop, Richmond Hill, Ontario (Canada)	74
Radcliffe, Univ. of S. Africa, Pretoria (S. Africa)	74
Mt. Stromlo, Canberra (Aus).	74
Helwan, Helwan (Egypt)	74
Okayama Astrophysical Lab., Kamogata (Japan)	74
Tokyo (Japan)	74
Dominion Astrophysical, Victoria (Canada)	72
Perkins Flagstaff, Arizona (U.S.)	72
Harvard, Oak Ridge, Massachussets (U.S.)	61
U.S. Naval, Arizona (U.S.)	61

FAMOUS BELLS

	Weight (tonnes)
Tsar Kolokol *(Kremlin, Moscow)*, 1733	193
Moscow Bell *(Moscow)*	128
Mingoon *(Mandalay, Burma)*	87
Chonan *(Honshu, Japan)*	74
Cordoba, Bosque Alegre *(Argentina)*	60
Arizona Un., Tueson, Arizona *(U.S.)*	60
Harvard, Bloemfontein (S. *Africa)*	60
Great Bell of Peking *(China)*	53
Kaisarglock *(Cologne Cathedral, Germany)*, 1925	25

HIGHEST BUILDING AND STRUCTURES

	feet
K. T. H. I.—T. V. Mast (Fargo, N. Dakota, U.S.A.) ...	2,063
W. B. I. R.—T. V. Mast (Knoxville, Tennessee U.S.A.) ...	1,749
K. F. V. S.—T. V. Mast Cape Girardeau, Missouri, U.S.A.) ...	1,676
W. G. A. N.—T. V. Mast (Portland, Maine, U.S.A.)	1,619
K. W. T. V.—T. V. Mast (Oklahama City, U.S.A.)	1,572
World Trade Centre *(N.Y.)*	1,350
Empire State *(N.Y.)* ...	1,250
TV. Tower (Tokyo) ...	1,092
Leningrad TV Mast *(USSR)*	1,060
Chrysler *(N.Y.)* ...	1,046
Eiffel Tower (Paris) ...	984½
60 Wall Tower *(N.Y.)* ...	950
40 Wall Tower *(N.Y.)* ...	927
Bank of Manhattam *(N.Y.)*	900

LARGEST SHIPS

Passanger Liner	*Gross tonnes*
Queen Elizabeth *(British)*	82,998
France *(France)* ...	66,348
Queen Elizabeth II *(British)* ...	58,000
United State *(U.S.)* ...	52,072
Raffaello *(Italy)* ...	45,993
Michelangelo *(Italy)* ...	45,733

Oil Tankers	*Gross tonnes*
Universe Ireland *(Liberia)*	149,600
Universe Kuwait *(Liberia)*	149,600
Idemitsu Maru *(Japan)*	107,957
Marisa *(British)* ...	105,495
Megara *(France)* ...	105,296
Tokyo Maru *(Japan)* ...	94,630

BIGGEST, LARGEST, HIGHEST, LONGEST

Largest Tree ...	A *California Redwood* in Sequoia National Park, California ; 272 ft. 4 in tall with a base circumference of 101 ft. 7 in.
Tallest Tree ...	*Howard Libbey Tree*—a California Redwood in Humboldt Country, California (USA) ; Height : 385 ft.
Biggest Passenger Ship	*Queen Elizabeth* (82,998 tonnes).
Longest Seaway ...	*St. Lawrence Seaway* (US), 189 miles.
Largest Diamond Mine	At Kimberly, South Africa.
Largest Diamond ...	*Cullinan* (over 1½ lbs.).
Tallest Statue ...	*Statue of Liberty* (New York), 305 ft. from the base of the pedestal to the top of the torch.
Largest Temple ...	*Angkor-Vat* (Cambodia), 1,400 yds. by 1,400 yds.
Largest Church ...	*Basilica of St. Peter*, Vatican City, 611 ft. 4 in. length and 18,110 sq. yds. in area.

Tallest Church	*Ulm Cathedral* (Ger.) 529 ft. high.
Largest Mosque	*Jumma Masjid* (Delhi), over 10,000 sq. ft. in area.
Longest Corridor	*Rameswaram Temple's Corridor*, 4,000 feet.
Longest Port	*New York Harbour* (U.S.A.).
Longest Railway Run	*Riga to Vladivostock* (U.S.S.R.), 6,000 miles.
Longest Railway Platform	*Kharagpur* (India), 2,733 ft.
Biggest Railway Station	*Grand Central Terminal* (New York), with 47 platforms and 67 tracks, 48 acres in area.
Largest Pearl	*Pearl of Allah*, weighs 14 lbs. 2 oz.
Largest Bell	*Tsar Kolokol* at Kremlin (Moscow), weighs 193 tons, is 22 ft. 8 in diameter and over 19 ft. high.
Deepest Mine	*East Rand Proprietary Mine* (Transvaal, S. Africa), 12,500 ft. deep.
Largest Telescope	*Hale, on Mt. Palomar* (California, U.S.A.), diameter of reflector is 200 inches.
Largest Dome	*Above Pittsburgh Civic Arena* (Pennsylvania, U.S.A.), 415 ft. in exterior diameter.
Longest Aquaduct	*Colorado River Aquaduct* (California, U.S.A.), 242 m. long.
Largest Road Tunnel	*Mont Blanc* (France—Italy), 7.2 m. long.
Biggest Library	*United States Library of Congress* (Washington, D. C.). It contained over 41,874,900 titles.
Tallest Tower	*Eiffel Tower* (Paris), 948½ ft. high.
Largest University Building	*Lomonosov University* (Moscow), has 32 stories and 40,000 rooms.
Largest Palace	The *Palace at Vatican City*, covers an area of 13.5 acres and has 1,400 rooms. chapels and halls.
Deepest Boring	An oil well of 25,340 ft. (Texas, U.S.).
Largest Indoor Theatre	*Radio City Music Hall* (New York), accommodates 6,200 persons.

Longest Viaduct	*Lake Ponchartrain Causeway* (Louisiana, U.S.) with a total length of 24.0 miles.
Highest Lighthouse	*Bishop Rock* (England), 146 ft. high.
Largest Sculptures	*Mount Rushmore National Memorial* (Black Hills, S. Dakota, U.S.A.) with busts of Presidents G. Washington, T. Jefferson, T. Roosevelt and A. Lincoln.
Largest Concrete Dam	*Grand Coulee* on Columbia River (U.S.A.), 10,585,000 cubic yards.
Highest Dam	*Nurek* in Tadzhikstan (U.S.S.R.), 1,017 ft.
Largest Dam	*Fort Peck* across Missouri River (U.S.A.), 125,628,000 cubic yards.
Longest Dam	*Hirakud* (India), 15.8 m. in total length.
Highest Straight Gravity Dam	*Bhakra Dam* (India), 740 ft.
Longest Railway Bridge	*Lower Zambezi* (Mozambique, Africa), 12,064 ft.
Longest Cantilever Bridge	*Quebec* (over St. Lawrence River, Canada), 3,239 ft. in overall length.
Highest Suspension Bridge	Over Royal Gorge (Colorado, U.S.A.), 1,053 ft. high.
Longest Suspension Bridge	*Verrazano—Narrows* (New York City harbour), 13,700 ft. in total length.
Tallest Building	*Empire State Building* (New York), 102 stories, 1,250 ft.
Largest Office Building	*Pentagon* (Arlington, U.S.A.), over 34 acres floor area : approximately 6,500,000 sq. ft. ; has 17 miles of corridor.
Longest Railway Tunnel	*East Finchley*—Morden (London underground Rly. Tunnel), 17¼ miles.
Largest Park	*Kafue National Park* (Zambia, Africa), 8,650 sq. m.
Biggest Zoo	*Etosha Reserve* (S. W. Africa), 38,500 sq. m.
Highest Airfield	*Ladakh Airfield* (Kashmir), 14,230 ft. above sea-level.
Longest Thoroughfare	*Broadway* (New York).
Biggest Museum	*American Museum of Natural History*, with 19 interconnected buildings ; floor area : 23 acres.

Largest Aquarium	...	*John G. Shedd Aquarium*, Illinois (USA), exhibiting over 10,000 specimens from 350 species.
Biggest Hotel	...	*Conrad Hilton* (Chicago, U.S.A.), has 25 floors.
Biggest Stadium	...	*Strahov Stadium* (Prague), accommodates 240,000 spectators.
Biggest Auditorium	...	*Municipal Auditorium* at Atlantic City (U.S.A.), covers an area of 7 acres accommodating 41,000 people.

NOBEL PRIZES. 1976

Literature	...	Sol Below (U.S.)
Chemistry	...	William Lipscomb (U.S.)
Physics	...	Burton Richter (U.S.) and Samuel Ting (U.S.)
Medicine and Physiology	...	B. S. Blumberg (U.S.)
Economics	...	Milton Fredman (U.S.)

The Calendar

NATIONAL CALENDAR—SAKA YEAR : The Government of India have adopted a uniform, National Calendar, based on the Saka era, for civil purposes. This calendar has been adopted with effect from March 22, 1957 corresponding to Chaitra 1, 1879 Saka. The year, A.D. 1977 is 1899 of the revised Saka era (31 December, 1976 was 10 Pousa, 1898).

The pre-eminence of the Saka era derives from the fact that it was used exclusively by the Sakadvipi Brahmins (the astrologer caste) for calendar-making and forecasting horoscopes since 1st century A.D. This was done on the basis of *Siddhantic* (scientific) astronomy evolved from old Indian calendar conceptions, which were put on a scientific basis by blending them with astronomical conceptions prevalent in the West in the 3rd century. The Saka era is 78 years behind the Christian era. The Saka year commences on the first lunar Chaitra or the first solar Vaisakha in different parts of India.

Chaitra is the first month of the year. It consists of 30 days in the common years and 31 days in a leap year. The five months following the month of Chaitra consist of 31 days each and the last six months all have 30 days. The dates of the reformed Indian Calendar has thus a permanent correspondence with the dates of the present

Gregorian Calendar, the corresponding dates being Chaitra 1, March 22 in a common year and March 21 in a leap year ; Vaisakha 1, April 21 ; Jaisthya 1, May 22 ; Ashada 1, June 22 ; Sravana 1, July 23 ; Bhadra 1, August 23 ; Asvina 1, September 23 ; Kartika 1, October 23 ; Agrahayana 1, November 23 ; Pousa 1, December 22 ; Magha 1, January 21 ; and Phalguna 1, February 20.

INDIAN CALENDAR—The VIKRAMA or SAMVAT era is most widely used, specially in northern India, Rajasthan, Gujarat and is believed to have been established by Vikramaditya, King of Ujjain, to commemorate his victory over Saka kings. It commenced on February 23, 57 B.C. Samvat is a luni-solar year. The year A.D. 1977 is therefore, the year 2034 of the Samvat era.

Bengali year was originally a reckoning for agricultural and revenue purposes, instituted at the time of Akbar. In 1555-56 A.D. corresponding to Hijri 962-3, it became the *Fasli* or harvest era of northern India and was adopted as official era in Bengal.

CHAITANYA ERA—*Chaitanya* era commenced from 1407 A.D.

KALI YUGA—The oldest era of India is the *Kali Yuga*. The Kali Yuga began on the 18th Feb., 3102 B.C. Thus the Kali Yuga is 5079 in 1977.

MAHOMEDAN CALENDAR—The Mahomedan era dates from the Hijra or the flight of Mahomed from Mecca to Medina (July 16, 622 A.D. in the Gregorian Calendar).

CHRISTIAN CALENDAR—Until 1582 the Calendar used in all Christian countries was the Julian Calendar, in which the last year of all centuries was a leap year. By the sixteenth century this had caused a difference of 10 days between the tropical and calendar years. In 1582, Pope Gregory ordered that October 5 should be called October 15, and that of the years at the end of centuries only every forth one should be a leap year. The new Calendar was called the *Gregorian Calendar* and was gradually adopted throughout the Christian world. It came to be used throughout British Dominions in 1752.

LEAP YEAR—The present ordinary calendar year consists of 365 days and in order to allow for hours, minutes and seconds unaccounted for, the leap year of 366 days was invented. This happens every 4th year, in years which can be divided by 4, except that unless century-years (i.e., 1800, 1900) can be divided by 400, they are not considered as leap years. Thus 1900 was not a leap year, but 2000 will be one.

JEWISH CALENDAR—This is calculated from the supposed date of Creation (set at 3,760 years 3 months before the birth of Christ). The ordinary Jewish year has 354 days and is made up of 12 months. Every 19 years, however, there are 7 years of 384 days and this adjustment brings the Jewish Calendar into line with the regular solar year. The Jewish months have 30 and 29 days alternately and are called Tishri, Marcheshvan, Kislev, Tebet, Shebet, Adar, Ve-Adar, Nisan.

Iyar Sivan, Tammuz, Ab, Ellul. In years of 384 days an extra month of 30 days, called Ve-Adar, is inserted after Adar. The Jewish New Year's Day comes sometime between Sep. 5 and Oct. 5 in the Gregorian Calendar.

ZOROASTRIAN CALENDAR—employed by the Zoroastrians in India and Iran, began on June 16, 632 B.C.

BUDDHIST CALENDAR—It is reckoned from the death of Buddha in 543 B.C. (the actual date being 487 B.C.). The Buddhist year began on Vaisakhi Purnima.

HINDU CALENDAR—Hindus have employed luni-solar cycles made by the combination of solar years and lunar years so treated as to keep the beginning of the lunar year near that of the solar year. In some parts of India solar years are used, while in other parts lunars are followed.

A solar year is divided into 12 months in accordance with the successive *Sankrantis* or entrances of the sun into the sidereal signs of Zodiac. The name of the signs are :

Mesha, the ram (Aries) ; *Vrishabha*, the bull (Taurus) ; *Mithuna*, the pair (Gemini) ; *Karkata*, the crab (Cancer) ; *Singha*, the lion (leo) ; *Kanya*, the maiden (Virgin) ; *Tula*, the scale (Libra) ; *Vrischika*, the scorpion (Scorpio) ; *Dhanu*, the bow (Sagittarius) ; *Makara*, the sea monster (Capricorn) ; *Kumbha*, the water pot (Acquarius) ; *Mina*, the fishes (Pisces).

But they are also known in some parts by another set of names, preserving connection with the lunar months—*Chaitra*, *Vaisakha*, *Jaisthya*, *Ashada*, *Sravana*, *Bhadra*, *Asvina*, *Kartika*, *Margasirsa* or *Agrahayana*, *Pausa*, *Magha and Phalguna*.

The astronomical solar month runs from the moment of one *Sankranti* of the sun to the moment of the next *Sankranti* and as the signs of the Hindu Zodiac are all of equal length, 30 degrees, while the speed of the sun varies in accordance to the time of the year, the length of the month is variable.

The days of a solar month begin with sunrise and are named as follows : *Ravivara*, the day of the Sun (Sunday) ; *Somvara*, the day of the Moon (Monday) ; *Mangalvara*, the day of the Mars (Tuesday) ; *Budhvara*, the day of Mercury (Wednesday) ; *Brihaspativara*, the day of Jupiter (Thursday) ; *Sukravara*, the day of Venus (Friday) ; *Sanivara*, the day of Saturn (Saturday).

The lunar year consists primarily of 12 lunar months. It is of two principal varieties according as it begins with a certain day in the month of Chaitra or with the corresponding day in Kartika. The present name of the lunar months were derived from 12 out of 27 *Nakshatras* supposed to be companions of the moon during 12 full-moon nights.

YEAR—The Tropical year is the time the earth takes to go round the sun, 365.422 solar days. The *Calendar* year consists of 365 days but a year of which the date can be divided by 4 without a remainder is called a *leap year*, with one day being added to the month of February. The last year of a century is a leap year, only when its number can be divided by 400 (e.g. 1900 was not a leap year but 2000 will be one).

SEASONS—*Summer*, the first and warmest season of the year, begins at the Summer Solstice when the Sun enters the sign of Cancer (about June 21). But in popular parlance Summer in *India* includes the months of April and May (Baisakha and Jaistha). The second season, *Monsoon* or *Rainy*, starts sometimes in June and continues up to August (Ashada and Sravana). The third season, *Autumn*, begins at the Autumnal Equinox (i.e., about September 21), when the Sun enters the sign Libra, the beginning of which sign is at the intersection of the Equator and the Ecliptic, the point in the sky where the Sun crosses from N. to S. of the Equator and causes the length of day and night to be equal all over the world. In India, it is popularly held to include the months of September and October (Bhadra and Asvina). In India, we count *Hemanta* as the fourth season which is generally included in the Autumn season in western countries. This season ranges through October and November (Kartika and Agrahayana). *Winter*, the fifth and coldest season, begins at the Winter Solstice (i.e., about Dec. 21) when the Sun enters the sign of Capricorns and ends at the Vernal Equinox. In India, the season is popularly held to comprise the months of November, December and January (Pousa and Magha). *Spring*, the sixth season of the year, is defined to begin in the northern Hemisphere at the Vernal Equinox when the Sun enters the sign Aires (i.e. about March 21) and crosses the Equator, thus causing the day and night to be of equal length all over the world. In India, Spring in popular parlance comprises the months of February and March (Phalguna and Chaitra).

TIME—Standard time is reckoned from Greenwich, a village near London, England. It is recognised as the Prime Meridian of Longitude. The world is divided into 24 zones, each 15° of arc one hour in time apart. The meridian of Greenwich (0°) extends through the centre of the initial zone and the zones eastward are numbered from 1 to 12 with the prefix 'minus' indicating the number of hours to be substracted to obtain Greenwich Time. The zones westward are similarly numbered but prefixed 'plus' showing the number of hours that must be added to get Greenwich Time.

Local Time—When the system of local time is used, it is 12 o'clock (noon) at any region where the sun is at highest point in the sky, and shadows are cast in a line extending north and south.

Longest and Shortest Days—The longest day is the day on which the sun is at its greatest distance from the equator ; this is called the *Summer Solstice*. It varies between June 21 and 22.

The shortest day is the day of the *Winter Solstice* and is now December 22 in every year ; later in this century it will be December 21 in some years.

Summer Time—means putting forward of the clock by one hour during months of summer—was first introduced in the First World War. Its purpose then was to cut down the use of power for lighting ; but in peace time it was continued so that people might enjoy longer summer evenings.

International Date Line—is an imaginary line extending north and south through the Pacific Ocean, and is the point at which the traveller must add or subtract a day from the calendar. On o journey wetsward across the Pacific, he must add a day ; when travelling eastward, he is required to set the date back by one day.

Indian Standard Time—The Indian Standard Time which is 5½ hours ahead of the Greenwich Mean Time, was first adopted on 1st January, 1906. India now follows Indian Standard Time.

Dog Days—These are the days about the rising of the Dog Star, the hottest period of the year in the northern hemisphere. Roughly they are between July 3 and August 25.

Astronomical Data

SOLAR SYSTEM—consists of one star (sun), nine planets and all other satellites (moons), several thousand minor planets (also called *asteroids*) and equally large number of comets. The centre of the solar system is the sun, our earth being one of the planets revolving round it.

PLANETS—Planet is a large solid body that revolves round the sun or another star. Earth is one of the planets. There are nine such known planets, such as mercury, venus, earth, mars, jupiter, saturn, uranus, neptune and pluto.

	Average distance from sun (in miles)	*One revolution around sun*	*Diameter (in miles)*
Mercury	36,000,000	88 days	3,000
Venus	67,200,000	224¾ days	7,650
Earth	92,900,000	365¼ days	7,927
Mars	141,500,000	687 days	4,200
Jupiter	483.300.000	4,332 days	88,700
Saturn	886,100,000	10,759 days	75,000
Uranus	1,782.800,000	30,687 days	30,900
Neptune	2,793,500,000	60.127 days	33.000
Pluto	3,666,000,000	90,400 days	3,600

SUN—Our sun is a star and is the centre of the solar system. It is a huge ball of gases that is so hot that they give off light. It is this star which gives the earth light and heat. By the force of gravitational attraction, the sun keeps the planets in their regular orbits and pull them through space at the rate of about 12 miles per second.

The diameter of the sun is 864,000 miles. It consists of 2.2 octillion tons of gaseous matter, most of which is hydrogen and helium. It revolves round its axis once in 25 days 9 hours and is approximately 92,900,000 miles from the earth. The light from the sun reaches the earth in 498.6 seconds. Its surface temperature averages 10,000°F. Its most prominent features are solar storms called *sunspots*—dark areas as large as 80,000 miles across. These spots usually occur in pairs and move from left to right across the visible solar face as the sun rotates.

STAR—is a large sphere of glowing gas in space. Some stars are so far away that they are seen only as points of light in the night sky. Stars are very large and are intensely hot, deriving their energy from nuclear reactions going on in their interiors.

GALAXY—All the stars we see in the sky (with a very few exceptions), are part of a Galaxy—a system of roughly 30 billion stars. A cursory glance in the sky is sufficient to show that fainter stars are concentrated towards the region of the Milky Way. It is now known that this system, called the Galaxy, is about 108,000 light years in diameter and has thickness less than 5,000 light years. Milky Way is the centre plane of the system.

ASTEROIDS—are actually little planets. They travel round the sun just as big planets do. More than 1,500 asteriods have been recognised and many more are believed to exist. *Ceres* with its diameter of about 480 miles is the largest asteroid.

CONSTELLATIONS—A group of stars that, as seen from the earth, seemed to ancient people to form pictures in the sky. The constellations appear in different parts of the sky at different times of the year. The names they gave to the constellations tell us what pictures they saw.

METEORS—are pieces of Matter which fall on the earth out of space. They plunge into earth's atmosphere at great speed and become incandescent from the resultant friction, so that they are seen in the sky as fire balls or 'shooting stars'.

METEORITES—Any mass of metal or stone that has fallen on earth from outer space. Meteorites range in size from pebbles to gigantic masses weighting over 100,000 pounds.

AURORAS—The 'northern lights' (*Aurora Borealis*) as well as the 'southern lights' (*Aurora Australis*) are upper-atmospheric phenomena but of astronomical origin. Aurora Borealis is a broad display of rather faint light in the northern skies at night. This Aurora appears in a wide variety of forms. Sometimes it is seen as a quite glow, almost fog-like in character ; sometimes as vertical streamers in which there may be considerable motion ; sometimes as a lumninous series of expanding arcs.

These are of many colours. The Aurora Austrails is a similar phenomenon seen in southern skies.

COMETS—are heavenly bodies of luminous and nebulous appearance, that move round the sun in a orbit which is normally an elongated eclipse. Ordinarilly, a comet has a head of cloudy brightness. Sweeping from the head curves the tail which extends sometimes to great or small length. A few comets travel in hyperbolic orbits, never returning, but most comets return over a period of years. The most famous is the Halley's Comet which can be seen every seventy years. Comets are enormous snow-balls of frozen gases containing very little solid material.

SATELLITES—are heavenly bodies revolving around larger heavenly bodies. Planet Saturn has nine known satellites. The earth has one, the *moon*. A number artificial satellites have been placed in the orbit around the earth by means of rockets fired into space. These satellites carry instruments and cameras.

EARTH—is called a planet because it circles the sun. In shape, it is almost a sphere, being slightly flattened at the poles, as well as being rather pear-shaped, with the pear's stalk at the North Pole. The whole surface of the earth is blanketed by a layer known as atmosphere. Its diameter from Pole is 7,900 miles and at the Equator, 7,929 miles. Its average distance from the sun is 92,900,000 miles. The earth has two movements within the solar system : (1) It revolves round the sun in an elliptical path, making a complete revolution in 365 days 5 hrs. 49 m. and 12 s., its speed on its path being 18½ miles per second or 66,600 miles per hour. The travelling of the earth around the sun helps to cause seasons. (2) It spins on its polar axis at the rate of one in 24 hours.

MOON—is the satellite of the earth. It is nearer to the earth than any other of the stars or planets. It has a diameter of 2,160 miles and its average distance from the earth's surface is 238,900 miles. It revolves round the earth once in 27 days 7 hrs. 43.2 min. and its speed on its orbit is 2,300 miles per hour. Because the moon is so near the earth, it exercises a gravitational pull on the earth's seas and oceans, and this gives rise to the earth's tides.

The moon does not give off light of its own but appears to shine because of the sun-light falling on it.

ATMOSPHERE—The atmosphere is composed of air which surrounds or envelopes the whole earth. It is sometimes likened to a great sea of gases, at the bottom of which we live. This air which surrounds the globe, affects the light that occurs to us from heavenly bodies. It refracts light rays that enter into it. Due to this refraction, we see the sun and the moon before they rise and after they set. The 'twinkling' of the stars is caused by convection currents in the air, that have rapidly changed refractive effects on the light from the stars. *Twilight* is produced by the diffusion in the atmosphere of light from the sun, when it is below the horizon. Chemically the atmosphere is composed of nitrogen, oxygen, and negligible amounts of argon, helium, hydrogen and carbon dioxide.

Science

GREAT INVENTIONS

Invention	*Inventor*	*Country*	*Year*
Adding Machine	Burroughs	U.S.	1885
Air-brake	G. Westinghouse	U.S.	1868
Air Conditioning	W. H. Carrier	U.S.	1911
Airplane	W. & O. Wright	U.S.	1903
Bakelite	L. H. Baekeland	U.S.	1907
Balloon	Montgolfier Bros.	France	1783
Barometer	E. Torricelli	Italy	1643
Bessemer Converter	Sir H. Bessemer	England	1856
Bicycle	Macmillian	Scotland	1842
Carburretor	G. Daimler	Germany	1879
Cash Register	James Ritty	U.S.	1876
Celluloid	John W. Hyatt	U.S.	1870
Cinemascope	Aspdin	England	1845
Cement, Portland	Henri Chretien	France	1931
Clock, Pendulum	G. Huygens	Netherlands	1656
Coke Oven	Hoffman	Austria	1893
Cotton Gin	Eli Whitney	U.S.	1793
Cyclotron	E. O. Lawrence	U.S.	1931
Diesel Engine	Rudolf Diesel	Germany	1895
Dynamite	Alfred Nobel	Sweden	1866
Dynamo	Picinotti	Italy	1860
Electric-magnet	W. Sturgeon	England	1825
Electric Generator	Michael Faraday	England	1831
Electric Lamp	T. A. Edison	U.S.	1879
Electric Motor, A.C.	Nicolà Tesla	U.S.	1892
Elevator, Passenger	E. G. Otis	U.S.	1857
Fountain Pen	L. E. Waterman	U.S.	1884
Gramophone	Berliner	U.S.	1887
Gyrocompass	E. A. Sperry	U.S.	1905
Gyroscope	Leon Foucalt	France	1852
Helicopter	Sikorski	U.S.	1939

Invention	*Inventor*	*Country*	*Year*
Hydroplane	Glen Curtiss	U.S.	1911
Iconoscope	Zworykin	U.S.	1923
Internal Combustion Engine	G. Daimler	Germany	1885
Jet Propulsion	Sir Frank Whittle	England	1930
Kodak	George Eastman	U.S.	1888
Lamp, Incandescent	T. A. Edison	U.S.	1879
Linotype	O. Merganthaler	U.S.	1885
Locomotive, Steam	R. Trevithick	England	1801
Loudspeaker	Pin-Kellog	U.S.	1924
Machine Gun	R. J. Gatling	U.S.	1861
Match, Friction	John Walker	England	1827
Microphone	Berliner	U.S.	1877
Microscope, Compound	Z. Janssen	Netherlands	1590
Motor Cycle	G. Daimler	Germany	1885
Movie Projector	T. A. Edison	U.S.	1893
Nylon, Synthetic	W. H. Carothers	U.S.	1930
Parachute	F. Blanchard	France	1785
Phonogram	T. A. Edison	U.S.	1877
Photography, Black & white	Loius Daguerre	France	1837
Photograrphy, Colour	Lippman	France	1891
Pistol	Colt	U.S.	1835
Pneumatic Tyre	Dunlop	North Ireland	1888
Printing Press	Gutenberg	Germany	1450
Quick Freezing of Food	Birdseye	U.S.	1925
Radar	Taylor & Young	U.S.	1922
Radio	G. Marconi	Italy	1895
Rayon	Swan	England	1883
Reaper	C. McCormick	U.S.	1834
Refrigeration, Mechanical	Parkins	U.S.	1834
Rifle, Automatic	John M. Browning	U.S.	1918
Rocket, Liquid Fuel	R. H. Goddard	U.S.	1929
Rubber, Vulcanized	G. Goodyear	U.S.	1839
Safety Lamp	Sir H. Davy	England	1816
Safety Pin	Walter Hunt	U.S.	1849
Safety Razor	*Inventor*	U.S.	1895
Sewing Machine	Elias Howe	U.S.	1846

Invention	Gillette	*Country*	*Year*
Sleeping-car	G. M. Pullman	U.S.	1858
Spinning Jenny	J. Hargreaves	England	1767
Spectroscope	Kirchaff-Bunsar	Germany	1859
Steam Engine	James Watt	Scotland	1765
Steamboat	Robert Fulton	U.S.	1803
Stethescope	Laennec	France	1819
Submarine	John P. Holland	U.S.	1891
Tank, Military	E. Swinton	England	1914
Telegraph	Samuel Morse	U.S.	1832
Telephone	A. Graham Bell	U.S.	1876
Telescope	H. Lippershay	Netherlands	1608
Television	John L. Baird	England	1926
Thermometer, Mercuric	G. D. Fahrenheit	Germany	1714
Torpedo	Whitehead	England	1866
Tractor, Caterpillar	B. Holt	U.S.	1900
Typewriter	C. Sholes	U.S.	1868
Vacuum Tube	Lee de Forest	U.S.	1907
X-ray Machine	W. K. Roentgen	Germany	1895
Zipper	W. L. Judson	U.S.	1891

THEORIES

Alternating Current, Laws of: Steinmetz, 1892.

Atomic theory : John Dalton, 1803.

Atomic Number : H. Moseley, 1913.

Atom Smashing Theory : Rutherford, 1919.

Classification of Plants & Animals : C. Linneaus, 1737-53.

Combustion, Nature of : A. Lavoisier, 1777.

Conditioned Reflex : I. P. Pavlov, 1910.

Displacement of Water, Theory of : Archimedes, 3rd century B.C.

Dynamic Theory of Heat : Kelvin, 1851.

Electro-magnetic Waves : Heinrich Hertz, 1886.

Electron, Wave Nature of : Loius Victor de Broglie, 1924.

Evolution by Natural Selection : Charles Darwin, 1859.

Falling Bodies, Law of : Galileo, 1590.

Gases, Laws Governing : Joseph Gay-Lussac, 1809.

Germ Theory : Loius Pasteur, 1876.

Gravitation, Laws of : Isaac Newton, 1687.

Hererdity, Laws of : G. Mendel, 1865.

Intelligence Testing, Modern : A Binet & T. Simon, 1905.

Isotopes, Theory of : F. Soddy, 1912.

Light, Electro-magnetic Theory of : J. C. Maxwell, 1873.

Light, Velocity of : Olaus Romer, 1675.

Molecular Hypothesis : A. Avogadro, 1811.

Multiple Production, Laws of : John Dalton, 1808.

Ohm's Law : G. S. Ohm, 1827.

Origin of Species : C. Darwin, 1859.

Periodic Table : D. Mendeleef, 1869.

Photo-electric Cell, Principles of : A. Becquerel, 1839.

Psycho-analysis, Theory of : Sigmund Freud, 1904.

Quantum Theory : Max von Planck, 1901.

Refraction of Light, Laws of : W. Snell, 1621.

Relativity, Theories of : A. Einstein, 1905.

Radio-activity : A. Bacquerel. 1896.

Spectrum Analysis : R. Bunsen & G. Kirchnoff, 1859.

Uranium Fission Theory : Hahn, (Ger.), Strassmann (Ger.) Bohr (Danish), Fermi (Italian), Wheeler, Pegram and Einstein (U.S.).

Water, Synthesis of : H. Cavendish, 1781.

ATOMIC ENERGY

Just as the Space Age is said to have started with the orbiting of Sputnik I, the Atomic age is said to have started with the explosion of a test bomb on July 16, 1945, near Alamogordo, N. M. USA at 5-30 a.m. local time. The bomb was placed on top of a steel tower, and observers were stationed in bunkers 10,000 yards away. The explosion vaporized the steel tower, produced a mushroom cloud rising to 40,000 ft. and melted the desert sand into glass for distances up to 800 yards from the tower.

The first operational use of an atom bomb took place only three weeks later, when a uranium bomb was exploded over Hiroshima Japan, on Aug. 6, 1945. The bomb, cylindrical in shape, 10ft. lon with a diameter of 2 ft. 4 in., weighed about 9,000 lbs. Its explosiv force was equal to 20,000 tons of TNT, hence the term "20-kiloto bomb". Three days later, another atomic bomb, this time of plut nium, was exploded over Nagasaki.

Of course, the Atomic Age did not begin with the explosion of th above two bombs. In both cases these visible feats were just exper ments which proved the theory that had been built up patiently ov decades.

At the turn of the century, scientists began to wonder whether t atoms of the chemical elements might not be composed of smaller p ticles. This was actually a contradiction in terms, because the Greek word atoms, from which the word atom derived, meant "indivisible". But there were some indications of particles smaller than an atom—the electrons. In 1905, Albert Einstein suggested that matter might just be "condensed energy" and gave the conversion formula $E=mc.^2$, in which E represents the energy, m the mass, and c the velocity of light. If this formula was correct, a small piece of matter of should represent enormous amount of energy.

Fission and Fusion

As is now generally known, atomic energy can be released into two ways. One is the fission of elements with very heavy atoms, such as uranium and plutonium, whiih will split when struck by a neutron, a sub-atomic particle. The splitting of the heavy atom releases more neutrons, which are then available to split other atoms—the so-called chain rection. The other way of obtaining atomic energy is fusion ; four light atoms (hydrogen) are fused together into the next heavier element (helium). The fusion reaction requires enormous heat and very high pressures. These pressures, coupled with very high temperatures, can most easily be produced by exploding a fission bomb, which is the reason why it is often said that a fission bomb is the trigger for a fusion (hydrogen) bomb.

Interestingly enough, the fusion reaction was discovered first, though only on paper. For the period from 1910 to 1930, most physicists believed that the release of atomic energy, if it could be done, would be of no practical value. They asserted that causing the release would require more energy than could be obtained. Most astronomers, on the other hand, were convinced that atomic energy is released in the sun and the other stars because there was no other way to account for the energy the stars radiated into space. Trying to account for the energy radiated by the stars led to theoretical papers predicting what we now call the fusion reaction. At the time (1930), atomic fission was still unknown : it was discovered first by Fermi in 1934, and the process was repeated by Hahn and Strassmann in 1938. But nobody yet knew that the sudden bursts of energy observed in the experiments were due to the fission of the uranium-235 atom. This was established (by way calculation) by Dr. Lise Meltner. Once it was known what appened, the way to a premediated release of atomic energy was clear.

But nobody could be quite certain whether the release would take he form of an explosion or whether it would be slow enough to be used o generate power. American scientists proceeded under the assumpon that the release would be sudden and violent (and the Alamogordo st proved them right), while Professor Heisenberg in Germany thought e slow release to be more likely, which is the reason why the Germans d not start a large-scale energy project.

Political Information

ABDICATION—Usually means the renunciation of the royal office by a sovereign ; the act may be voluntary.

ADJOURNMENT—suspension of a sitting of a legislative body, either by the speaker or on the demand of the majority members of the house. A house is adjourned automatically if a quorum of members is not present.

AGENT PROVOCATEUR—a French term for a political agent sent during political or social conflicts into the adversary's ranks to provoke in the guise of an adherent, incidents and compromising actions.

ALIEN—one belonging to another country and not enjoying the rights of citizenship.

AMNESTY—pardon granted by a sovereign or the government of a State of an offence, specially one of a political character.

ANARCHISM—a political doctrine which holds that every form of government is evil. The anarchists want to do away with all forms of State and government and substitute for them free associations of individuals or groups without any coercive organisation, without written law, police courts, prisons or armed forces.

ANTI-SEMITISM—means opposition to the Jewish race. The movement appears to be based on economic rather than on religious or political cause. It started in Russia and Hungary with the pogroms of 1882 and gradually spread south and westward to France. During the World War II the indiscriminate mass massacre of the Jews by the Nazis and their accomplices led to a big exodus of the community to different parts of the world and finally to the creation of the state of Israel.

APARTHEID—is a South African word, meaning "apartness", the separation of the Blacks from the Whites in South Africa. The process is also known as segregation (literally, separated from the Blacks). It affects the movements of non-Whites, restricting their choice of residence, occupation and marriage, and their property. It is to-day the policy of the governing National Party of South Africa.

APPEASEMENT—a policy of making concessions to an aggressor (originally that of Neville Chamberlain in 1938-39).

ARMISTICE—cessation of hostilities by mutual agreement between belligerents. It may be either temporary for the purpose of removing the wounded or burying the dead or preliminary to a general peace.

AUTARKY—the idea that a country should produce everything it requires and cut down foreign imported goods. It gained considerable impetus after the World War I.

AUTONOMY—in its political sense, means limited self-government short of independence. The objective test autonomy is recognition that the group may legislate for itself.

BALANCE OF POWER—the principle of maintaining an equality of strength between countries or group of countries so that no single country or group becomes too powerful for the safety of the others.

BICAMERAL SYSTEM—a form of government which consists of two separate Houses or Chambers and in which the concurrence of both is necessary to the enactment of legislation ; adopted to act as a check upon hasty, or ill-considered legislation.

BLITZ—a quick, violent, campaign intended to bring speedy victory, intensive air-attack ; short for *blitzkrieg*, a German word.

BLOC—an association of legislative members or of political parties or group, formed to support a certain measure or ministry.

BLOCKADE—a term used in international law for the prevention of goods entering or leaving an enemy country by land or sea. Neutral States are affected most by a blockaded country, they and their cargoes are liable to be conficasted by the blockading force.

BLUE-BOOK—popular name for an official report, statistical or other government publication which, because of its bulk, is provided with a blue cover of stouter quality than the inside pages.

BOLSHEVISM—radical trend in the Russian social democracy which later developed into a system of totalitarian dictatorship. The Bolsheviks accept the doctrine that in irreconcilable antagonism exists between the propertied class or bourgeois and the property-less workers. It invites as inevitable and necessary class war, the object of which is the destruction of all classes, except the proletariate, in whose interest and by whom future society will be organised and governed on a communistic basis.

BONAPARTISM—High political ambition of top military officials.

BOURGEOIS—a French word for the 'citizen class', a term used by Marxist socialists to mean industrialists, merchants and people with a business of their own, as opposed to the proletariate who earn a living only by selling their labour.

BRAINWASHING—forcible replacement of one set of political ideas by another set, specially through indoctrination under duress and persistent psychological pressure.

BUFFER STATE—a small State established or preserved between two bigger belligerent State to either prevent direct clashes between them or make hostilities less probable.

BUREAUCRACY—government by an elaborate system of administrative departments and officials, which generally tends to become unwieldy and labourious in its operation. It produces red-tapeism or oversystematization. Its most *frequently* charged defects are rigidity, conservatism and spirit or, routine.

CABINET—a private room in which confidential advisers of a sovereign or chief minister of a State meet ; group of advisers or ministers.

CAPITALISM—the economic system founded on free enterprise and private ownership of the means of production and distribution of goods.

CASTING VOTE—vote given by a person presiding at a meeting of a body of which he is a voting member, in the event of the members being equally divided on an issue ; therefore, the deciding vote.

CIVIL DISOBEDIENCE—non-violent political campaign refusing to co-operate with a government or to abide by its laws.

COLD WAR—a struggle between two countries or groups of countries waged by use of political and economic strategy, propaganda and other measures short of armed combat.

COLONY—a territory permanently settled by people from another land. A measure of internal self-government may be granted to a colony. It may then become responsible for its own social policy—labour, education or housing. But the mother country or colonial power still maintains the right to *veto* (forbid) acts passed by the local government.

COMMUNISM—the theory, as expounded by Marx and Engels, aims at the creation of a society in which the private ownership of land, factories, banks, trading houses, etc., is abolished and everyone receives what he needs and works according to his capacity. Communists believe that revolution and the use of force are justified to bring about the creation of such a society. Two fundamental principles of communism are : peaceful co-existence between countries of different social systems, and the class struggle between oppressed and oppressors.

CONDOMINIUM—a territory, the responsibility over which is shared by two administering powers.

CONSCRIPTION—a compulsory enlistment for military service of all able bodied men.

CONSTITUENT ASSEMBLY—an assembly converted for the purpose of drawing up a constitution, but it comes only—and this is the vital point—after there is a breakdown in the existing machinery of a government and a change has been brought about in the *status quo.*

CONTRABAND—goods or merchandise, the import or export of which is forbidden ; in wartime, applied specially as between neutrals and belligerents.

CORRIDOR—a strip of the territory of one State running through that of another, usually to give access to the sea.

COUP D'ETAT—a violent change in the government of a country carried about by force or illegally by group of relatively minor authority ; also, bold measures of a government to prevent supposed or actual danger.

DEMOCRACY—a form of government in which sovereign power resides in the people as a whole, and is exercised either directly by them or by their elected representatives.

DIALECTICAL MATERIALISM—the theory propagated by Marx and Engels, according to which political events are regarded as due to a conflict of social forces (the "class struggle") produced by man's material needs, and history as a series of contradictions and their solutions.

DICTATORSHIP—rule by one man who, in deciding what to do about internal or external affairs of the country he controls, does not have to consider or consult anyone but himself.

DIPLOMACY—management of international relations by negotiation ; skill in conduct of international intercourse.

DOLLAR DIPLOMACY—a nickname for the foreign policy of U.S.A., for expanding American financial and commercial interests abroad under the guise of promoting international friendship.

DOSSIER—set or bundle of documents relating to a particular person or happening.

ELECTORAL COLLEGE—any body of electors, limited in number, meeting in one place to choose a public official.

EMBARGO—order forbidding ships of foreign country to enter or leave ports of a country, either as precaution, or with an intention for hostilities.

ESPIONAGE—a French word which expresses more than the English word 'spying' ; it implies an organised system.

EXTRADITION—surrender of a fugitive from justice by one country or State to the authorities of another to which he belongs.

EXTRA-TERRITORIALITY—a legal fiction that foreign diplomats and diplomatic agencies are outside the country of residence in spite of physical presence. Embassies, etc. form foreign islands, so to speak, within the territory of a State. They are not subject to its laws.

FASCISM—A system of government which denies all fundamental rights of its citizens and establishes one-man rule who is accepted as infallible.

FEDERATION—a system of Government in which smaller States or the province of a State, hand over certain powers, such as foreign policy, defence, tariff to a Central Government, while controlling over some part of their internal affairs.

FIFTH COLUMN—secret supporters of an enemy engaged in sabotage or other subversive activities within defence lines.

FILIBUSTER—an obstructionist in legislative bodies.

FRANCHISE—right to vote in parliamentary elections.

GENOCIDE—a calculated attempt to exterminate systematically a racial, religious or political group ; also, an effort to destroy the language, religion, or culture of a group.

GUERILLA—sporadic warfare against a regular army by hands of irregular troops, usually by the inhabitants of an invaded country.

IMPERIALISM—the policy of empire-building and conqests transcending national frontiers. It now means every policy of conquest and colonial expansion. Since the World War I imperialism has more frequently taken the form of economic penetration than of political domination.

INTERNATIONAL LAW—body of rules regarded by the nations of the world as being binding on them in their relations with each other, in peace and war.

INTERNATIONALS—the socialist movement in which socialists from many countries are united. There have been four such Internationals, and each has held several congresses. The *First International* accepted a programme drawn up by Karl Marx and lasted from 1866 to 1874. The *Second International*, in which there was trade union element, was organised in 1889 in Paris to celebrate the 100th anniversary of French Revolution. It sought to compass the aims of socialism by constitutional, not revolutionary action and it held several congresses between 1882 and 1930. The *Third International* was organised in Moscow in 1919 by the delegates from 12 countries to promote communism and suppport the Russian Revolution. It was dissolved in 1943. It declared in favour of establishing communism by force. The *Fourth International* was founded in 1936 by the followers of Trotsky.

IRON CURTAIN—a barrier created by such means as censorship and prohibition of free travel to isolate Russian-controlled territories from outside contacts ; hence, any similar barrier against communication.

LAME DUCK—members of the legislature who fail to get re-elected but continue to function as legislators until the new legislature meets. The term was used in the United States.

LEND-LEASE—the system of lending and leasing supplies and installations to each other, developed by the Allies in the World War II. It was started by President Roosevelt.

MARXISM—the socialist doctrine following the theories of Karl Marx. His ideas are that all wealth is produced by the labour and should go to it. The labour is deprived of its fruits by the capitalists ; so the workers must prepare for class war in which capitalism will be destroyed.

McMAHON LINE—the Indo-Chinese border line, drawn in 1914 at a British-Tibetan-Chinese Conference and named after a British administrator. Communist China, which has absorbed Tibet, repudiated the McMahon Line as delimiting her border with India. India insists that it is a legitimate and legal border-line.

MORATORIUM—a legally or officially determined period during which no business engagements are completed or debts or liabilities enforced. It is declared by the government in time of a financial crisis.

NATIONALIZATION—taking management by the State of trades, industries, etc., with or without compensation, *i.e.*, changes from private to State ownership and control.

NATURALIZATION—a process by which an alien of a state becomes its citizen. Generally when an alien lives in a state for a certain period he can—if he so wishes and the state agrees—become a citizen of the State.

NEUTRALITY—in international law, non-participation by a State in a war between other States and maintenance of an impartial attitude in its dealings with the belligerents, with the recognition of this impartiality by the belligerents.

NON-AGGRESSION PACT—a treaty between two or more States pleading each not to attack the other and to settle their disputes by negotiation or arbitration.

ORDINANCE—that is which is ordained by authority. Ordinance is an act promulgated by the Head of a State without carrying it through the legislature of that State.

OSTPOLITIK—West Germany's policy of rapproachment with Communist East Europe.

PACIFISM—opposition to war or military force in any form. Pacifists believe that all international disputes should be settled by arbitration. Various movements towards world peace are not necessarily wholly pacifistic, as they often advocate defensive war and oppose only aggressive war.

PLEBISCITE—a direct vote by the voters of a country or district on a specific question. In the usual election, the people vote for or against the government on all the policies for which it stands ; in a *plebiscite* or *referendum*, they vote only on one particular question.

PLURAL VOTING—the system of allowing a person to cast more than one vote in the same election. The voter is eligible to vote in more than one constituency by virtue of its special position, *i.e.*, a city and a university vote by the same person.

POLITBUREAU—short for *Political Bureau*, which is the leading body of communist parties. The Politbureau of the communist party of Soviet Union is regarded by many as the real government of Russia. Every communist party in whatever country has a Politbureau.

PRIVILEGES, PARLIAMENTARY—"The some of peculiar rights enjoyed by each House collectively as a constituent part of the High Court of Parliament, and members of each House individually, without which they could not discharge their functions and which exceed those possessed by other bodies or individuals."—*Erskine May*.

PRIZE COURT—a court of law set up in time of war to decide whether a ship and its cargo, captured by the navy is a lawful prize or not. If it is decided that a captured ship is an enemy property or a cargo is contraband, they are sold and the proceeds thereof are distributed among all members of the navy at the end of the war.

PROLETARIATE—the wage-earning class of a community collectively, *i.e.*, property-less class dependent on the sale of labour and having no reserve of capital. In Marxism, the proletariate is opposed to bourgeois, the employing class, and will eventually overthrow it.

PROPORTIONAL REPRESENTATION—the method used in an election by which the votes are so counted that each party has representation in the elective body in proportion to its strength, so as to ensure the representation of minorities.

PROTOCOL—the rough draft of a diplomatic document, on which diplomatic transactions tentatively commence.

QUISLINGS—local traitors, named after Norwegian traitor, Major Quisling, who betrayed his country to the Germans ; especially those who quietly prepared the way for Germany to her neighbouring countries.

QUORUM—the minimum number of members required to be present to permit business to be transacted.

RESIDUARY POWERS—in federal constitution where the powers are divided between the federal Centre and the federating States or units under a system of three lists—federal, state or provincial and concurrent, the powers relating to new spheres of administration not covered by any of the three lists are known as *residuary powers.*

SABOTAGE—At first, this word was confined in its meaning to malicious waste or destruction of an employer's property by workmen, as a means of enforcing demands in labour disputes. Now, it is being applied more broadly, to define any deliberate crippling or destruction of property, especially as practised by foreign secret agents or sympathisers for the purpose of demolishing military equipment and installations.

SANCTIONS—coercive measures taken to ensure fulfilment of international treaty obligations. Sanctions were provided in the Covenant of the League of Nations against countries resorting to war in definance of the Covenant. U. N. Charter also provides for sanctiou, though it does not use the word 'sanctions'.

SATYAGRAHA—passive resistance to a government, non-violent civil disobedience, a policy adopted by Mahatma Gandhi in India.

SCORCHED EARTH—a wartime policy of destroying all resources and means of sustenance when defending forces have to withdraw before the invaders.

SOCIALISM—A political and economic theory that advocates all key industries, commerce and important national services like health and education to be put under state control.

SPLINTER GROUP—in politics, a group of dissidents broken away from a large political party, original organisation, etc.

TOTAL WAR—denotes the present form of war in which the distinction between combatants and non-combatants is fast disappearing.

TOTALITARIAN—a belief in the complete centralization of government control under one political group and suppression of other parties.

TRUSTEESHIP—administration by a member of the United Nations of territory not yet ready for self-government.

ULTIMATUM—final statement of demands, rejection of which by opposite party is assumed to lead at once to rupture of friendly relations and to declaration of war.

UNDERGROUND—organised, secret resistance movement against a government or force in power.

UNILATERAL ACTION—action taken by one party to an agreement without consulting the other parties in international affairs.

VETO—prohibition of proposed or intended act ; exercise of constitutional right to forbid passing or putting in force of an enactment or measure. In the United Nations, only the five permanent members out of the 16 members of the Security Council have the power of *veto*, which prevents a decision being taken even if every other member is in favour of it.

WELFARE STATE—a State that by its concern with public health, insurance against sickness and unemployment and similar measure, assumes a large share of responsibility for the welfare of its citizens.

WHIP—a member of a political party responsible for ensuring the presence of his party members at voting time and for holding them in line with the party policy.

POLITICAL PLANS. TREATIES, CONFERENCES, ETC.

ANZUS TREATY—was signed in San Francisco on Sept. 1, 1951, under which members acknowledge that "an attack in the Pacific against any will involve all and agree to act to meet the common danger." Members are :U.S., New Zealand and Australia.

ARAB LEAGUE—Arab States formed a Union by a pact signed at Cairo on March 22, 1945, for the purpose of maintenance of Arab solidarity. The League consists of Algeria, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Saudi Arabia, Sudan, Syria, Tunisia, Egypt and Yemen. The League has customs and payments agrreements, and maintains a total boycott of Israel.

ATLANTIC CHARTER—Declaration of 8 common principles in the national policies of the U.S.A. and Great Britain, drawn up at a conference in mid-Atlantic on August 14, 1941 by Churchil and Roosevelt and endorsed by other nations then at war with Germany, Italy and Japan. It states (1) No aggrandisement, territorial or other ; (2) No territorial changes without expressed wish of the people immediately concerned ; (3)Right of all people to choose their own form of government ; (4) Easing of restrictions on trade, and access to raw materials of the world ; (5) Fullest collaboration among all nations in economic field ; (6) Future peace must ensure freedom from want and fear ; (7) Future peace must guarantee freedom of the seas ; (8) Aggressor nations must be disarmed pending the establishment of a general security system. It was announced on September 15, 1941, that 15 nations (including the USSR) fighting the Germans and the Italians had endorsed the charter.

BENELUX—is the combination of three countries—Belgium, Luxemburg and the Netherlands, which have established a complete Customs Union among themselves. No longer are there any tariff barriers between the three countries. Benelux became effective on October 29, 1947.

CENTRAL TREATY ORGANISATION—is the outgrowth of the Baghdad Pact which set up the Middle East Defence Organisation. CENTO was formed on August 21, 1959 after the seccession of Iraq, one of the five original members of MEDO, on March 24, 1959. Members are : U.K., Turkey, Iran and United States. Although it inspired the pact, the U.S.A. became a full member only on July 28, 1958. The pact's purpose is to provide shield on the northern tier of the Middle East against Soviet penetration. Its headquarters is at *Ankara.*

COLOMBO PLAN—effective from July 1, 1951, it was a six-year plan of economic aid to South and S.E. Asia agreed on at the British sponsored Conference at Colombo in January 1950 by Australia, Canada, Sri Lanka, Great Britain, India, New Zealand and Pakistan. Later, Malaya, Singapore, North Borneo, and Sarawak promised co-operation. Burma and Indonesia sent observers to meetings of the Consultative Committee in London. The project would raise £1,368 million, helped by governments, raised by bank loans, contributions, etc., to support mills, power plants, railways, irrigation, other capital goods, thus combating poverty and communism. The U.S.A. is not a participant, but would consult on Point Four Funds in Asia. The International Bank for Reconstruction and Development would co-operate. Members are : Afghanistan, Australia, Burma, Bhutan, Cambodia, Canada, Sri Lanka, India, Indonesia, Japan, Laos, Malaysia, Maldive Islands, Nepal, New Zealand, Pakistan, the Philippines, S. Korea, S. Vietnam, Singapore, Thailand, U.K. and U.S.A. (*Associate*).

COMICON—is the counterpart of European Common Market, started in the communist countries.

COMMON MARKET—is an agreement (known as Treaty of Rome, and also as *European Economic Community*) between six European nations : Belgium, France, Italy, Luxemburg, the Netherlands and West Germany to abolish all economic barriers among themselves by 1970. A treaty was signed in Rome on March 25, 1957. The broad object is to remove progressively all the economic and trade effect of their political frontiers and to create a single market with one common external tariff system. This means also complete freedom of travel and eventual employment for people within this group of nations and the dovetailing of policies on all State matters. Several other nations have become its associate members.

COMMONWEALTH—originally called the British Commonwealth of Nations, it is a free association of sovereign independent States of the United Kingdom, Canada, Australia, New Zealand, Lesotho, Swaziland, Malta, Barbados, Jamaica, Trinidad and Tobago, Mauritius, Western Samoa, Fiji and Bahamas and the Republics of India, Sri Lanka, Bangladesh, Ghana, Gambia, Guyana, Nauru, Sierra Leone, Cyprus, Nigeria, Kenya, Singapore, Tanzania, Botswana, Malawi, Malaysia, Uganda, Zambia, Besides, some 50 colonies, protectorates and trust territories, which are dependencies of the U.K., Australia or New Zealand, also form part of the Commonwealth.

The Commonwealth has no written constitution but its members are bound together by a community of ideals and interest. Most members of the Commonwealth have certain constitutional features in common. At the head of each of the Parliaments of the Commonwealth (except those of Malayasia and the Republics) is the Queen, in whose name the administration is carried on. In all those countries, the Queen is represented by the Governor-General, appointed by the Queen on the recommendation of the government of the country concerned and is totally independent of the Government of U.K.

COUNCIL OF EUROPE—was established on May 5, 1949, as a forum for discussion of European problems. Its aim is to achieve a greater unity between its members to safeguard their European heritage and to facilitate their economic and social progress. It has 18 members, consisting of America, Belgium, Cyprus, Denmark, France, Greece, Iceland, Ireland, Italy, Luxemburg, Malta, the Netherlands, Norway, Sweden, Switzerland, Turkey, U.K. and West Germany. Its headquarters is at *Strasbourg* (France).

EUROPEAN ATOMIC ENERGY COMMUNITY (EURATOM)—was set up in 1958 mainly to create within a short time, the technical and industrial conditions necessary for utilizing nuclear discoveries and specially to produce nuclear energy on a large scale.

EUROPEAN ECONOMIC COMMUNITY (EEC)—See *Common Market*.

EUROPEAN FREE TRADE ASSOCIATION (EFTA or OUTER SEVEN)—set up on January 4, 1960 by Stockholm Treaty, it is a loose grouping of 7 countries : Austria, Denmark, Norway, Portugal, Sweden, Switzerland and the U.K. Finland became an associate member on June 26, 1961. The primary objects of the EFTA are : to promote economic expansion in the area of the Association and in each Member state, to ensure the trade between Member States is carried on fair competition ; to avoid significant disparity between Member States in the conditions of supply of raw materials produced within the area ; and to contribute to the harmonious development of world trade and to the progressive removal of barriers to it. *Geneva* is its headquarters.

GENEVA CONVENTION—was originally adopted at a national conference held at Geneva in 1864, but was afterwards replaced by the convention of July 6, 1906, also adopted at Geneva. It was an international agreement, chiefly respecting the succour of the wounded in time of war and it forbade all cruel methods of warfare. In 1870-71, during the Franco-German War, a Red Cross Society was formed which did most valuable work, the Geneva cross flag, adapted from the insignia of the old military Order of St. John, being recognised as neutral. A further convention was made in 1929, dealing especially with the treatment of prisoners of war and civilians in the light of the experiences of the World War I, and there have been further amendments since. In 1949 a new convention was signed, after preliminary talks in 1946, incorporating amendments suggested by experiences of the World War II.

INTERNATIONAL RED CROSS—Two international organisations are known respectively as *International Committee of the Red Cross* and the *League of Red Cross Societies*, both with headquarters in *Geneva*, Switzerland. The first of these is a wholly international agency unconnected with any national society, and attempts to maintain the basic Red Cross principles of the Geneva Conventoin ; the second agency is a federation of autonomous national Red Cross Societies designed to further co-operation among them.

MARSHALL PLAN—On June 5, 1947, the then U.S. Secretary of State General Marshall described that hunger, poverty, desperation and chaos existed in many parts of Europe and declared that, if Europe was to be saved, the United States should extend co-ordinated, not piecemeal, aid. This aid should not be a palliative, but a cure. The U.S. could not itself draw up a plan for European reconstruction, but if the nations of Europe could get together, the U.S. ought to support it as much as practicable.

NORTH ATLANTIC TREATY ORGANISATION (NATO)—The Treaty was drawn up in 1948 and signed at Washington on April 4, 1949, by the foreign ministers of Belgium, Canada, Denmark, France, Iceland, Italy, Luxemburg, the Netherlands, Norway, Portugal, U.K. and U.S.A., Greece and Turkey became members of the Organisation in 1952 and German Federal Republic in 1955. Its headquarters is at *Evere*, near Brussels (Belgium). The parties agreed to safeguard the freedom, common heritage and civilisation of their people, founded on the principles of democracy, individual liberty and the rule of law, and settle disputes by peaceful means. They regard an armed attack against one or more of them in Europe or North America as an attack against them all.

ORGANISATION OF AFRICAN UNITY (OAU)—was formed on May 25, 1963 by 30 African countries, to coordinate cultural, political, scientific and economic policies ; to end colonialism in Africa ; to promote a common defence of the members' independence, Mauritius is the latest addtion to the list of its members. The headquarters is at *Addis Ababa* (Ethiopia).

ORGANISATION OF AMERICAN STATES (OAS)—In September 1947, eighteen Latin American countries (Nicaragua and Ecuador were excluded) and the U.S.A. signed at Rio de Janeirro, the Treaty under which all signatories agreed to protect against aggression every State in the Western Hemisphere. In April 1948 at *Bogota* (Columbia), all the 21 American nations (excluding Canada) joined the OAS to implement the Rio Treaty and form a collective security system. Members are : Argentina, Bolivia, Brazil, Chile, Columbia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Trinidad and Tobago, U.S.A., Uruguay and Venezuela. Cuba, a member since the inception was excluded from the Organisation in January 1962. Its headquarters is at *Washington.*

SOUTH-EAST ASIA TREATY ORGANISATION (SEATO)—was established at Manila on September 8, 1954 by 8 countries, to provide for collective defence and economic co-operation in S.-E. Asia. Its headquarters is at *Bangkok.* If any country within the area designated by the traety is threatened by an armed attack, the member must consult together about measures to be undertaken. They cannot, however, intervene unless expressly invited to by that country. Members are : Australia, Britain, France, New Zealand, the Philippines, Thailand and the U.S.A.

WARSAW PACT—is the 20-year mutual defence treaty signed on May 14, 1955 at Warsaw, by several communist countries—Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania and the USSR. The alliance was made necessary by the remilitarization of West Germany under Paris Pact of 1954. The Pact provides for its lapse as soon as an East-West collective security should come into force. A united military command with its headquarters at *Moscow,* was also set up.

SOME IMPORTANT POLITICAL PARTIES

PARTIES IN U.S.A.—There are no fundamental differences between the two major political parties of the U.S.A.—the *Republican* and the *Democratic.* Strictly speaking, two parties cannot be exactly classified under the left and the right pattern and there are conservative as well as progressive Republicans, as there are conservative and progressive Democrats. *Republican Party* under Abraham Lincoln's leadership in the nineteenth century, abolished slavery. *Democratic Party,* in the present century, has tended to represent itself as the party of the small man and of social reforms. It is supporter of civil rights for Negroes.

KUOMINTANG—the Chinese Nationalist Party, formed originally by the followers of Sun Yat-Sen in 1905. The party was driven out from the mainland of China by the communists and is now confined to the island of Formosa only.

CONSERVATIVE PARTY—one of the three chief political parties of England. It is the successor of the Tory Party of the 18th and 19th centuries. Traditionally, the *Torries* were the parties of the squire and the person as opposed to the Whigs, the forerunners of the Liberals, who though led a group of great land-owning families, drew their support mainly from the business classes and non-conformists.

LABOUR PARTY—It is the British Socialist Party composed of trade unions, socialists and co-operative societies, which came into official existence in 1908. It aims at bringing about by legislation, changes which will benefit the poorer classes. Nationalization of basic industries and public utilities is the main programme of the Party. The Party's policy is not based on Marxism—instead, it is derived from the ethical idealist of the labour co-operative and radical movements and the practical rationalisation of Fabianism.

LIBERAL PARTY—another party of England, which developed out of the Whig Party in the 19th century, stood for Parliamentary reform, individual liberty, freedom of speech, of the press and of worship, for *laisser-faire* and/or international free trade. Towards the end of the 19th century, Liberal Party modified its views on *laisser-faire* to ensure minimum living standards for the working class and laid the foundation of what we call today 'welfare state'.

COMMUNIST PARTY—is the world organisation of Marxist socialists, which once operated through branch national parties very loosely affiliated to the Communist International or 'Comintern', later abolished by the order of Stalin. The International (*see Index*) has again been revived under the name of 'Cominform', which is said to be the Common Information Bureau of the Communist Party in nine countries of Europe.

INDIAN POLITICAL PARTIES

INDIAN NATIONAL CONGRESS—Its first session took place in Bombay in 1885. W. C. Bonnerjee was its first president. The objective of the Indian National Congress as adopted in 1948, is "the well-being and advancement of the people of India and the establishment in India by peaceful and constitutinoal means of a Co-operative Commonwealth based on equality of opportunity and of political, economic and social rights and aiming at world peace and fellowships." The Congress advocates a democratic secular government with welfare as the goal. A. I. C. C., in 1963, advocated 'democratic socialism'. The party was split into two in November 1969. The other section of Congress is known as Oranisation Congress. It has been recognised by Election Commission as a separate political party.

INDIAN NATIONAL CONGRESS (ORGANISATION)—came into being after split of Indian National Congress (see above) in 1969.

COMMUNIST PARTY OF INDIA—Organised in its form in 1924, the Party moulds its policy with reference to the policy of Russia in international affairs, rather than according to the conditions obtaining in India. They follow orthodox international communist line. The party's aim is "the organisation of the toiling masses in the struggle for the victorious anti-imperialists and agrarian revolution for complete national independence, for the establshment of a people's democrtic

State led by the working class, for the realisation of the dictatorship of the proletariat and the building-up socialism according to the teachings of Marxism and Leninism.

COMMUNIST PARTY (MARXIST)—A section of the Communist Party members who want to follow the Chinese line as their policy severed its connection with parent body and formed this party.

PROJA SOCIALIST PARTY—was formed by the fusion of the Socialist Party and the Kisan Mazdoor Party. The Party declares as its objective the establishment of a democratic socialist society in India. A number of state units of the party have either merged with Congress or Socialist Party of India.

SAMYUKTA SOCIALIST PARTY—The P.S.P. and the Socialist Party led by Late Ram Monohar Lohia were merged into one and formed *Samyukta Socialist Party* on June 7, 1964. A few months later, some of the P.S.P. members withdrew to revive the P.S.P. again.. The Party aims to achieve by peaceful and democratic means, a socialist society, free from social, political and economic exploitation of man by man and of nation by nation.

SOCIALIST PARTY OF INDIA—comprising Samyukta Socialist Party, Proja Socialist Party and Indian Socialist Party was formally launched on 9th August, 1971.

REVOLUTIONARY SOCIALIST PARTY OF INDIA—preaches Marxist doctrine and wants to establish a socialist State in India through revolution. It is organised on the principle of democratic centralism but oppose sub-servience to the foreign policy of Russia or China. It is now split into two factions.

FORWARD BLOC—came into existence in 1938 when Subhas Bose sought to rally leftists against the Congress orthodoxy. It favours a programme of direct action and repudiates all compromises. The Party's objective now is the establishment of a socialist State in India with complete severance of relations with the Commonwealth.

HINDU MAHASABHA—The aim of the Mahasabha is the protection and promotion of all that contribute to the advancement, strength and glory of Hindu Rashtra, Hindu culture and Hindu policy, and as a means to that end, to achieve Hindu Raj and re-establish the integrity of the State of Bharat by constitutional means.

BHARATIYA JAN SANGHA—was founded by Late Dr. Shyama Prasad Mukherjee in 1951. It has stronghold in several States. It has more or less the same objectives as Hindu Mahasabha. It wants that the Government of India should take a strong action against Pakistan. It also wants complete integration of Kashmir with India.

PEASANTS AND WORKERS PARTY—The Party's programme includes "severance of all connection with British imperialist, abolition of landlordism without compensation, confiscation of foreign capital invested in banks and industries."

AKALI DAL—a politico-religious party of a section of the Sikhs.

It aims at maintaining the separate identity of the Sikh community and the establishment within Indian Union of a Punjabi Suba as a homeland for the Sikhs, and advocates the adoption of Gurumukhi language as a State language for the Punjab State.

DRAVIDA MUNNETRA KAZHAKAM—a party of South India consisting mainly of non-Brahmins, who are against the domination of North India and the superiority of the Brahmins. The party obtained absolute majority in the Tamil Nadu Legislative Assembly at the Elections of 1967 and 1971.

POLITICAL ABBREVIATIONS

AID	Agency for International Development (USA)
AMGOT	Allied Military Govts. of Occupied Territory
ANZUS	Australian, New Zealand and U.S. Defence Pact (Pacific Security Treaty)
ASEAN	Association of South-East Asian Nations
BIS	Bank for International Settlements
CARE	Co-operative for American Remittances Everywhere
CENTO	Central Treaty Organization
CERN	European Organization (formerly Council) for Nuclear Research
COMECON	(East European) Council for Mutual Economic Assistance
ECA	(U.N.) Economic Commission for Africa
ECAFE	(U.N.) Economic Commission for Asia and the Far East*
ECE	(U.N.) Economic Commission for Europe
ECLA	(U.N.) Economic Commission for Latin America
ECM	European Common Market
ECOSOC	(U.N.) Economic and Social Council
ECSC	European Coal and Steel Community
EDC	European Defence Community
EEC	European Economic Community (*Common Market*)
EFTA	European Free Trade Association
ELDO	European Launcher Development Organization
EMA	European Monetary Agreement
ENEA	European Nuclear Energy Agency

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* *U.N. Specialized Agency.*

ESRO	European Space Research Organization
EURATOM	European Atomic Energy Community
FAO	Food and Agriculture Organization*
GATT	General Agreement on Tariff and Trade†
IADB	Inter-American Development Bank
IAEA	International Atomic Energy Agency†
IATA	International Air Transport Association
IBRD	International Bank for Reconstruction and Development (*World Bank*)*
ICAO	International Civil Aviation Organization*
ICEM	Inter-governmental Committee for European Migration
ICFTU	International Confederation of Free Trade Unions
IDA	International Development Association†
IFC	International Finance Corporation†
ILO	International Labour Organization*
IMCO	Inter-governmental Maritime Consultative Organization*
IMF	International Monetary Fund*
IRO	International Refugee Organization†
ITU	International Telecommunication Union*
LAFTA	Latin American Free Trade Association
NATO	North Atlantic Treaty Organization
OAS	Organization of American States
OAU	Organization of African Unity
OCAS or ODECA	Organization of Central American States (*Organization de Estados Cento Americanos*)
OECD	Organization for Economic Co-operation and Development
OEEC	Organization of European Economic Co-operation
OPEC	Organization of Petroleum Exporting Countries
RCD	Regional Co-operation for Development (Pakistan-Persia-Turkey)

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* *U.N. Specialized Agency.*

† *Under the aegis of the U.N., but not a Specialized Agency.*

SACEUR	Supreme Allied Commander, Europe
SACLANT	Supreme Allied Commander, Atlantic
SALT	Strategic Arms Limitation Talks
SEADO	South-East Asia Defence Organization
SEATO	South-East Asia Treaty Organization
SHAPE	Supreme Headquarters of Allied Powers in Europe
TAB	(U.N.) Technical Assistance Board
UMACE	Afro-Malagasy Union for Economic Co-operation
UNCAFE	United Nations Commission for Asia and Far East†
UNCTAD	United Nations Conference on Trade and Development
UNCURK	United Nations Committee for the Unification and Rehabilitation of Korea
UNDP	United Nations Development Programme
UNEF	United Nations Emergency Force in the Middle East
UNESCO	United Nations Educational, Scientific & Cultural Organization*
UNFICYP	United Nations Peace-Keeping Force in Cyprus
UNHCR	United Nations High Commissioner for Refugees†
UNICEF	United Nations International Children's Emergency Fund*
UNIDO	United Nations Industrial Development Organization†
UNO	United Nations Organization
UNOC	United Nations Operation in the Congo
UNRWA	United Nations Relief and Works Agency for Palestine Refugees
UNTSO	United Nations Truce Supervision Organization in the Middle East
UPU	Universal Postal Union*
WEU	Western European Union
WFTU	World Federation of Trade Unions

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* *U.N. Specialized Agency.*

† *Under the aegis of the U.N., but not a Specialized Agency.*

WHO World Health Organization*

WMO World Meteorological Organization*

FAMOUS ASSASSINATIONS

1865 Abraham Lincoln, President of U.S., April 15.

1872 Earl of Mayo, Governor-General of India.

1876 Abdul Aziz, Sultan of Turkey, June 4.

1881 Alexander II of Russia, Mar. 13 ; President Garfield of U.S., July 2.

1894 Marie F. Sadi-Carnot, President of France, June 24.

1896 Nash-ed-Din, Shah of Iran.

1898 Empress Elizabeth of Austria, Sept. 10.

1900 Humbert I of Italy, July 29.

1901 President McKinley of U.S., Sept. 6.

1903 King Alexander and his wife Draga of Serbia.

1905 Grand Duke Sergius of Russia.

1908 King Carlos & Crown Prince of Portugal.

1909 Prince Ito of Japan.

1911 Stolypin, Premier of Russia, Sept. 14.

1913 Francisco L. Madero, President of Mexico and Jose P. Suarez, Vice-President, Feb. 23 ; King George of Greece, Mar. 18.

1914 Archduke Francis Ferdinand of Austria & his wife, June 28.

1916 Grigori Rasputin, politically powerful monk, Dec. 30.

1918 Czar Nicholas II and his family, July 16 ; President Sidonio Paes of Portugal, Dec. 14.

1919 Amir Habibullah of Afghanistan.

1920 Gen. V. Carranza, President of Mexico, May 20.

1921 Dato, Premier of Spain ; Takashi Hara, Japanese Premier.

1922 M. Collins, Premier of Irish Free State, Aug. 22.

1928 President Alvaro Obregon of Mexico, July 17.

1930 Premier Hamaguchi, Japan.

1932 President Doumer, France ; Ki Inuki, Japanese Premier, May 31.

1933 Emir Faisal, King of Iraq, Sept. 9 ; Ion Duea, Rumanian Premier, Dec. 24 ; King Nadir Shah, Afghanistan.

1934 Austrian Chancellor Dr. E. Dollfuss, July 25 ; King Alexander I of Yugoslavia ; J. L. Barthow, French Foreign Minister, Oct.

1936 K. Takahasi, Finance Minister, Admiral Saito and Admiral Suzuki, Japan.

1939 Rumanian Premier M. Calinescau.

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* *U.N. Specialized Agency*

1940 Leon Trotsky, Russian leader, August 20.

1942 Admiral Jean Darlan of France, Dec. 24.

1945 Mehar Pasha, Premier of Egypt, Feb. 24.

1946 Ananda Mahidol, King of Siam, July 9.

1947 Gen. Aung San, Vice-President of Burma and five Cabinet Ministers.

1948 Mahtma Gandhi, Jan. 30 ; Count F. Bernadotte, U.N. Mediator for Palestine, Sept. 17 ; Premier N. Pasha of Egypt.

1950 C. Delgado Chalbond, President of Venezuela, Nov. 13 ; King Abdullah of Jordan, July 20 ; Liaquat Ali Khan, Premier of Pakistan, Oct. 16.

1951 King Abdul ibn Hussain of Jordan, July 20.

1955 President Jose Antonio Remon of Panama, Jan. 2.

1957 President Carlos Castillo Armas of Guatemala, July 26.

1958 King Faisal & Crown Prince of Iraq, Nuri-al-Said, Premier of Iraq, July 14.

1959 S. Bandarnaike, Premier of Ceylon (now Sri Lanka), Sept. 25.

1960 Premier Hazza Majali of Jordan, Aug. 29.

1961 Premier Patrice Lumumba of Congo, Jan. 17 ; Dominican Republic's Dictator Rafael Trujillo Molina, May 30.

1963 President Sylvanus Olympio of Togo, Jan. 13 ; Abdel Karim Kassem, Premier of Iraq, Feb. 8 ; Ngo-Dinh Diem, President of South Vietnam, Nov. 12 ; J. F. Kennedy, U.S. President Nov. 22.

1964 Jigme Dorji, Prime Minister of Bhutan, Apr. 5.

1965 Premier Hassan Ali Mansur of Iran, Jan. 21.

1966 Abubakar Tafawa Balewa, Prime Minister of Nigeria, Jan. 15 ; Dr. H. F. Verwoerd, Prime Minister of the Republic of South Africa, Sept. 6.

1968 Dr. Martin Luthar King. Jr. U.S. Apr. 4 ; Senator Robert F. Kennedy, U.S. June, 5.

1969 Tom Mboya, a Minister of Kenya, July 5 ; A. R. A Sher-marke, President of Somalia, Oct. 17.

1971 Wasfi Tell, Prime Minister of Jordan, Nov. 28.

1972 Sheikh Abeid Karume, Zanzibar ruler, April 7.

1975 Lalit Narayan Mishra, Union Railway Minister, India, Jan. 3 ; Richard Ratsimandrava, President of Madagascar, Feb. 11 ; King Faisal, Saudi Arabia, Mar. 25 ; President Mujibur Rahman of Bangladesh and his family, Aug. 15.

RULERS OR HEADS OF THE COUNTRIES

Country		*Executive Head*	*Premier*
Afghanistan	...	Md. Daud, *P.*	Md. Daud
Albania	...	Maj. Gen. Haxhi Lleshi, *P.*	Maj. Gen. Mehmet Shehu, *Chairman, Council of Ministers*
Algeria	...	Col. H. Boumedienne, *P.*	
Argentina	...	*P.*	
Australia	...	Sir John R. Kerr, G. G.	Malcolm Fraser
Austria	...	R. Kirchschlaeger, *P.*	B. Kreisky, *Chancellor*
Bahamas	...	M. B. Butler, *G. G.*	L. O. Pindling
Bahrain	...	Isa Bin Suleman al-Khalifa, *Emir*	Khalifa Bin Sulman al-Khalifa
Bangladesh	...	Md. Sayeem, *P.*	
Barbados	...	Dr. A. W. Scott, *G. G.*	Errol W. Barrow
Belgium	...	Baudouin I, *King.*	Leo Tindemans
Benin	...	Maj. M. Karekon, *P.*	
Bhutan	...	Maharaja Jigme Singye Wangchuk, *King.*	
Bolivia	...	Gen. Hugo Banzer Suarez, *P.*	
Botswana	...	Seretse Khama, *P.*	
Brazil	...	Gen. Ernesto Geisel	
Brunei	...	Hasan-el Bolkiah, *Sultan*	
Bulgaria	...	Todor Zhivkov, *P.*	Stanko Todorov, *Chairman, Council of Ministers*
Burma	...	Gen. Ne Win, *P.*	Sein Win.
Burundi	...	Michael Micombero, *P.*	
Cambodia	...	Khieu Samphan, *P.*	Penn Nouth
Cameroon	...	Ahmadou Ahidjo, *P.*	
Canada	...	Jules Leger, *G. G.*	Pierre E. Trudeau
Cape Verde	...	A. Pereira, *P.*	
Central African Rep.	...	Gen. J. B. Bokassa, *P.*	Mrs. Elisabeth Donitein
Chad	...	F. Malloum, *P.*	
Chile	...	Gen. Augusto Pinochet Ugarte, *P.*	

Country	*Executive Head*	*Premier*
China		Hua Kuo-feng
Colombia	Alfonso Lopez Michelsen, *P.*	
Comoro Is.	Ali Soilih, *P.*	
Congo	Maj Marien Ngouabi, *P.*	Henri Lopes
Costa Rica	D. O. Quiros, *P.*	
Cuba	Dr. O. D. Torrado, *P.*	Dr. Fidel Castro Ruz
Cyprus	Archbishop Makarios *P.*	
Czechoslovakia	Gustav Husek, *P.*	Lubomir Strougal
Denmark	Margrethe II, *Queen*	Anker Joergensen
Dominican Republic	Dr. Joaquin Balaguer, *P.*	
Ecuador	G. R. Lara, *P.*	
Egypt	Anwar el-Sadat, *P.*	Mamdouth Salem
El Salvador	A. A. Molina, *P.*	
Equatorial Guinea	F. M. Nguema, *P.*	
Ethiopia	T. Banti, *Chairman, Military Council*	
Fiji	Sir G. Cakobau, *G.G.*	Sir Kamisese Mara
Finland	Dr. U. K. Kekkonen, *P.*	K. Sorsa
Formosa (Taiwan)	Yen Chia-kan, *P.*	Ching Ching-kuo
France	Valery Giscard d' Estaing, *P.*	Raymond Barre
Gabon	Albert Bernard Bongo, *P.*	
Gambia	Sir D. K. Jawara, *G. G.*	
Germany (E)	Willi Stoph, *Chairman, Council of State*	H. Sindermann,
Germany (W)	Walter Scheel, *P.*	Helmut Schmidt *Chancellor*

Country	*Executive Head*	*Premier*
Ghana	Col. I. K. Acheampong	
Greece	M. Stassinopoulos, *P.*	Constantine Caramanlis
Grenada	Leo de Gale, *G.G.*	Eric Mathew Gairy
Gt. Britain	Elizabeth II, *Queen.*	James Callaghan
Guatemala	Gen. K. L. Garcia, *P.*	
Guinea	A. Sekou Toure, *P.*	L. Beavogui
Guinea-Bissau	L. Cabral, *P.*	
Guyana	Arthur Chung, *P.*	L. Forbes Burnham
Haiti	Jean-Claude Duvalier, *P.*	
Hondurus	Col. Juan Alberto Melgar Castro, *P.*	
Hungary	Pal Losonsczi, *P.*	G. Lazar
Iceland	Dr. K. Eldjarn, *P.*	G. Hallgrimsson
India	Fakhruddin Ali Ahmed, *P.*	Sm. Indira Gandhi
Indonesia	Gen. Suharto, *P.*	
Iran	R. Pahlevi, *Shah.*	Amir Abbas Hoveyda
Iraq	A. Hassan Al-Bakr, *P.*	
Ireland	*C. O. Dalaigh*	L. Cosgrave
Israel	E. Katzir, *P.*	Yitzhak Rabin
Italy	Giovanni Leone	G.Andreotti
Ivory Coast	F. Houphouet-Boigny, *P.*	
Jamaica	F. A. Glasspole, *G. G.*	M. Manley
Japan	Hirohito, *Emperor.*	Takeo Miki
Jordan	Hussain I, *King.*	Mudar Badran
Kenya	Jomo Kenyatta, *P.*	
Korea, N.	Kim Il-Sung, *P.*	
Korea, S.	Gen. Park Chung-Hi, *P.*	Kim Jhong-Pil
Kuwait	Sabah al-Salem al-Sabah, *Emir.*	Jaber al-Ahmed al-Jaber
Laos	Suvanna Vong, *P.*	Kaysone Phomvihan
Lebanon	Elias Sarkis, *P.*	Rashid Karami
Lesotho	M. Mosheshoe II, *King.*	Leabua Jonathan
Liberia	William R. Tolbert, *P.*	

Country	*Executive Head*	*Premier*
Libya ...	Col. M. el Gaddafi, *Chairman, Revolutionary Council.*	Abdel Salam Jalloud
Liechtenstein ...	F. Joseph II, *Prince*	Dr. W. Keiber
Luxembourg ...	Jean, *Grand Duke.*	Gaston Thorn
Madagascar ...	D. Ratsiraka, *P.*	
Malawi ...	Dr. H. K. Banda, *P.*	
Malaysia ...	Yang di-Pertuan Agong *Sultan.*	Datuk Hussein Onn
Maldives ...	Ibrahim Nasir, *P.*	
Mali ...	Lt. M. Traore, *P.*	
Malta ...	Sir A. Mamo, *P.*	Dom Mintoff
Mauritania ...	M. O. Daddah, *P.*	
Mauritius ...	Sir Raman Osman *G.G.*	Sir S. S. Ramgoolan
Mexico ...	Jose Lopez Portixo, *P.*	
Monaco ...	Rainier III, *Prince.*	
Mongolia ...	Y. Tsendenbal, *Chairman*	J. Batmunku
Morocco ...	Hassan II, *King.*	A. Osman
Mozambique ...	S. Machel, *P.*	
Nauru ...	Hammer de Roburt, *P.*	
Nepal ...	Birendra Bir Bikram Shah, *King.*	Tulsi Giri
Netherlands ...	Juliana, *Queen.*	Joop M. den Uyl
New Zealand ...	Sir D. Blundell, *G.G.*	W. E. Rowling
Nicaragua ...	Gen. A. S.Debalve, *P.*	
Niger ...	Seyni Kountche, *P.*	
Nigeria ...	Lt. Gen. O. Obasanjo *P.*	
Norway ...	Olav V, *King.*	Trygve M. Bratteli
Oman ...	Qabus bin said, *Sultan.*	
Pakistan ...	Chaudhry Fazal Ilahi, *P.*	Z. A. Bhutto
Panama ...	D. B. Lakas, *P.*	Gen. O. T. Herrera
Papua New Guinea ...		M. Somare
Paraguay ...	Gen. A. Stroessner, *P.*	
Peru ...	Gen. F. M. Bermudez *P.*	Gen. G. A. Galiani
Philippines, The ...	F. E. Marcos, *P.*	

Country	*Executive Head*	*Premier*
Poland	H. Jablonski, *Chairman, Council of State.*	Piotr Jaroszewicz
Portugal	Gen. Ramelho Eanes, *P.*	Mario Soares
Qatar	Khalifa bin Hamad al-Thani	Sheikh K. B. H. Al Thani
Rhodesia	C. W. Dupont, *P.*	Ian D. Smith
Romania	Nicolae Ceausescu, *P.*	Manea Manescu
Rwanda	Maj. Gen. H. Juvenal, *P.*	
Sao Tome Principe	M. P. da Costa, *P.*	
Saudi Arabia	Khalid bin Abdul Aziz, *King.*	
Senegal	L. S. Senghor, *P.*	A. Diouf
Sierra-Leone	S. Stevens, *P.*	S. Ibrahim Koroma
Singapore	Benjamin H. Sheares	Lee Kuan Yew
Somali	Md. S. Barre, *P.*	
South Africa	N. Diederichs, *P.*	Balthazar J. Vorster
Spain	Juan Carlos, *King.*	A. S. Gonzales
Sri Lanka	W. Gopallawa, *P.*	Mrs. S. Bandarnaike
Sudan	Gen. Gaafar el-Numeiry, *P.*	
Swaziland	Sobhuza II. *King.*	Prince M. Damini
Sweden	Gustav Carl XVI, *King.*	Olof Palme
Switzerland	P. Graber, *P.*	R. Gnagi
Syria	Hafez al Assad, *P.*	Abdel Rehman Khleifawi
Tanzania	Julius Nyerere, *P.*	Rashid M. Kawawa
Thailand	B. Adulyadej, *King.*	T. Kraivichein
Togo	Gen. G. Eyadema, *P.*	
Tonga	Taufa'ahau Tupou IV, *King.*	Tu'ipelehake
Trinidad & Tobago	Sir E. E. I. Clarke, *G.G.*	Eric E. Williams
Tunisia	Habib Bourguiba, *P.*	Hedi Nouira
Turkey	Adm. Fahri Koruturk, *P.*	S. Demirel
Uganda	Idi Amin, *P.*	
United Arab Emirates	Z. bin Sultan al-Nahayan, *P.*	

Country	*Executive Head*	*Premier*
Upper Volta ...	Gen. S. Lamizana, *P.*	
Uruguay ...	Aparicioo Mendez, *P.*	
U.S.A. ...	Jimmy Carter, *P.*	
U.S.S.R. ...	N. V. Podgorny, *Chairman of Presidium of Supreme Soviet.*	Alexei Kosygin, *Chairman of Council of Ministers*
Vatican City ...	Paul VI, *Pope,*	
Venezuela ...	Carlos Andres Perez, *P.*	
Viet-Nam ...	Ton Duc Thang, *P.*	Pham Van-Dong
Yemen, People's Dem. Rep. of	S. Robaye Ali, *P.*	Ali Nasser Hassani
Yemen Arab Rep. ...	Lt. Col. I. al-Hamdy, *P.*	A. Abdul Ghani
Yugoslavia ...	Josip Broz Tito, *P.*	Dzemal Bijedic
Zaire ...	Mobutu Sese Seko, *P.*	
Zambia ...	Kenneth Kaunda, *P.*	M. M. Chona
Western Samoa	M. Tanumafili II, *King.*	

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United Nations

ORIGIN—The United Nations Organisation was first discussed at Dumberton Oaks Conference, Washington D.C. between Aug. 21 and Sep. 28, 1941. It was finally put to concrete shape at San Francisco between April 25 and June 26, 1945, where representatives of 50 Allied Nations signed the United Nations Charter. The U. N. officially came into existence on Oct. 24, 1945, when the Charter had been ratified by China, France, the USSR, the UK and the US, and by a majority of other signatories. It was decided that the seats of the organisation should be in New York and a building was erected in Manhattan costing £ 23,000,000.

PURPOSES—The four purposes of the U. N. are—(1) to maintain international peace and security, (2) to develop friendly relations among nations, (3) to co-operate internationally in solving economic, social, cultural and humanitarian problems and in promoting respect for human rights and for fundamental freedoms, and (4) to be a centre for harmonizing the actions of nations in attaining these common ends.

FINANCE—The U. N. is financed by the contribution from member States. All member States contribute to the expenses of the budget and to the Working Capital Fund on a scale determined by the General Assembly each year on the recommendation of its Committee on Contributions.

ROSTER OF THE UN

The United Nations now has 141 members. They are enlisted below with respective dates of admission to the U. N. (Countries with *asterisk* marks are original Member States).

Member	*Date of Admission*	*Member*	*Date of Admission*
Afghanistan	19 Nov. 1946	Bhutan	21 Sep. 1971
Albania	14 Dec. 1955	*Bolivia	14 Nov. 1945
Algeria	8 Oct. 1962	Botswana	17 Oct. 1966
*Argentina	24 Oct. 1945	*Brazil	24 Oct. 1945
*Australia	1 Nov. 1945	Bulgaria	14 Dec. 1955
Austria	14 Dec. 1955	Burma	19 Apr. 1948
Bahamas	18 Sep. 1973	Burundi	18 Sep. 1962
Bahrein	21 Sep. 1971	*Byelorussian	24 Oct. 1945
Bangladesh	17 Sep. 1974	Cambodia	14 Dec. 1955
Barbados	9 Dec. 1966	Cameroon	20 Sep. 1960
*Belgium	27 Dec. 1945	*Canada	9 Nov. 1945
Benin	20 Sep. 1960	Cape Verde	16 Sep. 1975

Member	*Date of Admission*	*Member*	*Date of Admission*
Central African Republic	20 Sep. 1960	Grenada	17 Sep. 1974
Chad Republic	20 Sep. 1960	*Guatemala	21 Nov. 1945
*Chile	24 Oct. 1945	Guinea	12 Dec. 1958
†*China	24 Oct. 1945	Guinea-Bissau	17 Sep. 1974
*Columbia	5 Nov. 1945	Guyana	20 Sep. 1966
Congolese Republic	20 Sep. 1960	*Haiti	24 Oct. 1945
*Costa Rica	2 Nov. 1945	*Honduras	17 Dec. 1945
*Cuba	24 Oct. 1945	Hungary	14 Dec. 1955
Cyprus	20 Sep. 1960	Iceland	19 Nov. 1946
*CzechosloVakia	24 Oct. 1945	*India	30 Oct. 1945
*Denmark	24 Oct. 1945	†Indonesia	28 Sep. 1950
*Dominican Republic	24 Oct. 1945	*Iran	24 Oct. 1945
*Ecuador	21 Dec. 1945	*Iraq	21 Dec. 1945
*Egypt	24 Oct. 1945	Ireland	14 Dec. 1955
*El Salvador	24 Oct. 1945	Israel	11 May 1949
Equatorial Guinea	12 Nov. 1968	Italy	14 Dec. 1955
*Ethiopia	13 Nov. 1945	Ivory Coast	20 Sep. 1960
Fiji	13 Oct. 1970	Jamaica	18 Sep. 1962
Finland	14 Dec. 1955	Japan	18 Dec. 1956
*France	24 Oct. 1945	Jordan	14 Dec. 1955
Gabon	20 Sep. 1960	Kenya	16 Dec. 1963
Gambia	21 Sep. 1965	Kuwait	14 May 1963
Germany, Dem. Rep.	18 Sep. 1973	Laos	14 Dec. 1955
Germany, Fed. Rep.	18 Sep. 1973	*Lebanon	24 Oct. 1945
Ghana	8 Mar. 1957	Lesotho	17 Oct. 1966
*Greece	25 Oct. 1945	*Liberia	2 Nov. 1945
		Libya	14 Dec. 1955
		*Luxembourg	24 Oct. 1945
		Malagasy	20 Sep. 1960
		Malawi	1 Dec. 1964
		Malaysia	17 Sep. 1957
		Maldives	21 Sep. 1965
		Mali	28 Sep. 1960

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† *Withdrew on Jan.* 21, 1965 *but was again inducted on* 28*th Sept.*, 1966.

†**The Peking regime was on* 25*th October*, 1971 *voted into the U.N. and Taiwan expelled from it when the General Assembly approved a resolution moved by Albania recognizing the People's Republic of China as the only legitimate representative of China and calling for the immediate expulsion of the representatievs of Chiang Kai-shek.*

Member	*Date of Admission*
Malta	1 Dec. 1964
Mauritania	27 Oct. 1961
Mauritius	24 Apr. 1968
*Mexico	7 Nov. 1945
Mongolia	27 Oct. 1961
Morocco	12 Nov. 1956
Mozambique	16 Sep. 1975
Nepal	14 Dec. 1955
*Netherlands	10 Dec. 1945
*New Zealand	24 Oct. 1945
*Nicaragua	24 Oct. 1945
Niger	20 Sep. 1960
Nigeria	7 Oct. 1960
*Norway	27 Nov. 1945
Oman	7 Oct. 1971
Pakistan	30 Sep. 1947
*Panama	13 Nov. 1945
*Paraguay	24 Oct. 1945
*Peru	31 Oct. 1945
*Philippines	24 Oct. 1945
*Poland	24 Oct. 1945
Portugal	14 Dec. 1955
Qatar	21 Sep. 1971
Romania	14 Dec. 1955
Rawanda	18 Sep. 1962
Sao Tome Principe	16 Sep. 1975
*Saudi Arabia	24 Oct. 1945
Senegal	28 Sep. 1960
Sierra Leone	27 Sep. 1961
Singapore	21 Sep. 1965
Somalia	20 Sep. 1960
*South Africa	7 Nov. 1945
Spain	14 Dec. 1955
Sri Lanka	14 Dec. 1955
Sudan	12 Nov. 1956
Swaziland	24 Sep. 1968
Sweden	19 Nov. 1946
*Syria	24 Oct. 1945
Tanzania	14 Dec. 1961
Thailand	16 Dec. 1946
Togo	20 Sep. 1960
Trinidad & Tobago	18 Sep. 1962
Tunisia	12 Nov. 1956
*Turkey	24 Oct. 1945
Uganda	25 Oct. 1962
*Ukaraine	24 Oct. 1945
United Arab Emirates	9 Dec. 1971
*United Kingdom	24 Oct. 1945
*United States	24 Oct. 1945
Upper Volta	20 Sep. 1960
*Uruguay	18 Dec. 1945
*USSR	24 Oct. 1945
*Venezuela	15 Nov. 1945
Yemen Arab Republic	30 Sep. 1947
Yemen, People's Democratic Republic of	14 Dec. 1967
*Yugoslavia	24 Oct. 1945
Zaire	20 Sep. 1960
Zambia	1 Dec. 1964

HEADQUARTERS AND OFFICES—The headquarters of the U.N. is at New York. The European office of the U.N. is at Geneva. From 1954 U.N. Information Centres and services are operating at 50 capital cities all over the world.

UNITED NATIONS' FLAG—The flag is light blue in colour and emblazoned in white in its centre is the UN's symbol—a polar map of the world embraced by twin olive branches.

UNITED NATIONS' LANGUAGES—The official languages of the United Nations are Chinese, English, French, Russian and Spanish.

ORGANS OF THE UNITED NATIONS

Principal organs of the United Nations are—(1) *General Assembly*; (2) *Security Council*; (3) *Economic and Social Council*; (4) *Trusteeship Council*; (5) *International Court of Justice*; and (6) *Secretariat*.

GENERAL ASSEMBLY—consists of representatives of all the member nations, each with one vote but none with veto power. Each member is entitled to be represented at its meeting by not more than five representatives. The General Assembly meets once a year in regular session and also in special sessions when necessary. Special sessions are convoked by the Secretary-General at the request of the Security Council or of a majority of the members of the U.N. Voting on important questions is by a simple majority.

COMMITTEES—To facilitate its works, the General Assembly breaks up into 7 main Committees: (1) Political and Security (including regulations of armaments); (2) Economic and Financial; (3) Social, Humanitarian and Cultural; (4) Trusteeship and Non-Self-Governing Territories; (5) Administrative and Budgetary; (6) Legal; (7) Special Political Committee.

SECURITY COUNCIL—is primarily responsible for keeping international peace and security. Any nation, a U.N. member or not, and Secretary-General may bring dispute or a threat to peace to the attention of the Security Council. It has 15 members, 5 of which (United States, U.K., France, USSR and China) are permanent. 10 non-permanent members—at present Benin, India, Libya, Pakistan, Panama, Romania, Mauritius, West Germany, Canada and Venezuela are elected by a two-thirds majority of the General Assembly for a 2-year term and are not eligible for immediate re-election. The Council is organised to be able to function continuously. Each member acts as the Council's President for one month. A negative vote by any permanent member is a veto. The Council can take no action if any permanent member does not agree, i.e., uses the veto. If the question to be discussed concerns one of the permanent members, that member is not allowed to vote. An abstention not regarded in practice as a veto against. When the Council is handling a dispute or situation, the General Assembly makes no recommendations unless the Council requests it.

ECONOMIC AND SOCIAL COUNCIL—consists of 27 members by a two-thirds majority of the General Assembly. 9 are elected each year for a 3-year term and meets usually twice a year. It works towards establishing lasting world peace by helping the poor, the sick and the illiterate all over the world. Through its Functional and Regional Economic Commission, the specialized agencies, the Technical Assistance Committee and consultation with non-governmental organisations, the Council promotes better social, economic, educational and health condition of air services and simpler customs, immigration and public health procedure at international methods and equipment. *Headquarters* : International Aviation Building, Montreal-3 (Canada).

INTERNATIONAL DEVELOPMENT ASSOCIATION (IDA)—is another affiliate of the International Bank, which came into existence on September 24, 1960. IDA makes loans on terms more flexible than those for more conventional loans, for important development projects in under-developed countries, irrespective of whether the project so assisted is revenue-producing or directly productive. *Headquarters* : 1818 H. Street, N. W. Washington 25, D.C.

INTERNATIONAL FINANCE CORPORATION (IFC)—was formed on July 20, 1956, to promote economic development by aiding in productive private enterprises in member countries, particularly in the less developed ones ; and to invest in new or existing enterprises in conjunction with private capital, and without Government guarantee of repayment in cases where sufficient private capital is not available on reasonable terms ; and to bring together private capital and management. The IFC became a specialized Agency of the U.N. on Feb. 20, 1957. It is affiliated with the World Bank but has its own funds. *Headquarters* : 1818 H. Street, N.W., Washington 25, D.C.

INTERNATIONAL LABOUR ORGANISATION (ILO)—was established on April 11, 1919, as an autonomous part of the League of Nations and recognised as a specialized agency in 1946 by the U.N. The purposes of I.L.O. are—to contribute to the establishment of lasting peace by promoting social justice ; to improve, through international action, labour conditions, to raise living standards ; and to promote economic and social stability. *Headquarters* : 154, rue de Lausanne, CH-1211 Geneva-22 (Switzerland).

INTERNATIONAL MONETARY FUND (IMF)—is the world's biggest source of readily available international credit, and was established on Dec. 27, 1945 in terms of Articles of Agreement formulated at the Bretton Woods Conference in July 1944. Its purposes are : to promote international monetary co-operation, expansion of international trade and exchange stability and avoid competitive exchange depreciations ; to assist in the establishment of a multi-lateral system of payments ; and to permit the members, under appropriate conditions, to draw upon the resources of the Fund with a view to shortening the duration and lessening the degree of any disequilibrium which may, from time to time arise in their balances of payments. *Headquarters* : 19th and H. Streets, N.W., Washington 25, D.C.

INTERNATIONAL TELECOMMUNICATION UNION (ITU)—was established on Jan. 1, 1934. This is the oldest of the Specialized Agencies going back to a predecessor organisation established in 1865. It is a technical and administrative body for the development and improvement of world-wide communications and is concerned with the improvement of communication equipment and the wider use of telecommunication services and facilities. One of its chief functions is to bring into the use of radio frequencies. *Headquarters* : Palais des Nations, Geneva (Switzerland).

INTERNATIONAL TRADE ORGANISATION (ITO)—The Interim Commission for International Trade Organisation was set up in 1948, to prepare for the creation of I.T.O. In 1950, it became evident that the creation of I.T.O. would be indefinitely postponed. The small staff of ICITO, however, continued to supply services for the contracting parties to the General Agreements on Tariffs and Trade. The intention to create ITO has been abandoned, but its work in the field of commercial policy is being undertaken to a large extent through the co-operation of GATT. *Headquarters* : Palais des Nations, Geneva (Switzerland).

UNITED NATIONS INTERNATIONAL CHILDREN'S EMERGENCY FUND (UNICEF)—was established in 1946, to meet the emergency needs of children, particularly in war-devastated countries. UNICEF is not a specialised agency, but a subsidiary body of the General Assembly reporting to the Economic and Social Council. *Headquarters* : at U.N., New York.

UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT (UNCTAD)—The United Nations Conference on Trade and Development, held in Geneva in 1964 and attended by representatives of 120 Governments, recommended action to help the developing countries increase and stabilize their earnings from commodities, expand their exports from manufactured goods and obtain the capital needed for development programmes. It also recommended establishment of permanent United Nations machinery to promote international trade and help accelerate economic growth.

On 30 December, 1964, the United Nations Conference on Trade and Development (UNCTAD), was formally established as a permanent organ of the General Assembly, composed of all Members of the United Nations and related agencies. A 55-member Board carries on its functions between Conference sessions.

To help in its search for solutions to specific trade problems, manufactures, shipping, and "invisibles" (such as freight and insurance charges and income from tourism) and financing related to trade.

Year-round continuity is provided by an international secretariat headed by a Secretary-General. UNCTAD has headquarters in Geneva and a liasion office in New York.

UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANISATION (UNESCO)—was established on Nov. 4, 1946. Its purposes are : to help combat illiteracy, raise living standards through education, promote collaboration among the nations through education, science and culture in order to further universal respect for justice, for the rule of lay and for human rights and fundamental freedoms without the distinction to age, sex, language race or religion. *Headquarters* : 9, Place de Fontenoy, Paris-7 (France).

UNITED NATIONS HIGH COMMISSIONER FOR REFUGEES (UNHCR)—The Office of the UNHCR is an integral part of the United Nations. It came into existence of Jan. 1, 1951. Its task of a social and humanitarian and, therefore, of non-political nature. Its role is to promote, organise, co-ordinate and supervise international action on behalf of the refugees under the High Commissioner's mandate. *Headquarters* : Palais des Nations, Geneva (Switzerland).

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANISATION (UNIDO)—In order to promote industrial development and to help accelerate the industrialization of developing countries, the General Assembly in 1966 established the United Nations Industrial Development Organization (UNIDO).

In addition to operational activities, which stress aid in the manufacturing sector, UNIDO undertake action-oriented studies and research programmes on various aspects of industrialization, and co-ordinates the activities of the United Nations family of agencies in this field. UNIDO's headquarters are in Vienna.

UNITED NATIONS INSTITUTE FOR TRAINING AND RESEARCH (UNITAR)—Established in Dec. 1963 by the General Assembly, the United Nations Institute for Training and Research (UNITAR) began operations in 1965. The Institute trains personnel for service with national administration or with United Nations itself, in order to further the objectives of the United Nations system. UNITAR's headquarters are in New York.

UNIVERSAL POSTAL UNION (UPU)—aims to assure the organisation and perfection of the various postal services and to promote the development of international collaboration. To this end, member countries are united in a single postal territory for the reciprocal exchange of mail. It was established on July 1, 1875 by the Universal Postal Convention at Berne. *Headquarters* : Caisse Postal, Berne-15 (Switzerland).

WORLD HEALTH ORGANISATION (WHO)—came into being on April 7, 1948. Its objective is 'the attainment by all peoples the highest possible level of health''. *Headquarters* : Palais des Nations, Avenue Appia, 1211 Geneva-27 (Switzerland).

WORLD METEOROLOGICAL ORGANISATION (WMC)—came into being on March 23, 1950. It aims to promote international co-operation in the field of meteorology and the quick exchange of weather data ; to establish world-wide networks of metrological stations ; to further the application of meteorology to human activities ; and to encourage research and training in the field of meteorology. *Headquarters* : 41, Avenue Guiseppe Motta, Geneva (Switzerland).

World Gazetteer

A BRIEF SURVEY OF ALL THE COUNTRIES OF THE WORLD

AFGHANISTAN—a landlocked mountainous Moslem kingdom, lying between Pakistan, Iran and USSR. Towering above Kabul are the Hindukush mountains. There are no railways and navigable rivers. Rough mountains have prevented the building of rail-roads.

The Government was constitutional monarchy. The Cabinet comprised the Prime Minister, chosen by the King. the President of the National Assembly and Ministers. Afghanistan is divided into 29 provinces each under a Governor. On Sept. 20, 1964, a new constitution was approved by the Grand Assembly. A new Parliament, consisting of an elected Lower House (*National Assembly*) with 216 members and partly-elected Upper House (*Senate*) was opened on Oct. 14, 1965. The country was proclaimed a Republic on July 17, 1973 in a palace coup which overthrew the regime of King Zahir Shah and ended the monarchy.

The predominant religion in the country is Islam. Agriculture and sheep-rearing are the main livelihood of the people, Afghanistan is rich in fruits. Chief items of export are cotton, wool, hides and skins, oilseeds, etc. *Area* : 253,861 sq. m. *Population*—18,800,000. Capital—*Kabul.*

ALBANIA—a mountainous Balkan Communist republic in southern Europe bounded by Yugoslavia, Greece and the Adriatic Sea. It was incorporated with Italy in 1939 but was proclaimed on Jan. 11, 1946 by the Communists. Under the 1945 Constitution, Albania has a typical Soviet-type Government. Supreme power is vested in the popularly elected National Assembly, to which the Cabinet, headed by the Premier, is responsible.

The staple crops are wheat and maize. Forest reserves are considerable. It is preponderantly agricultural nation and new industries are chemical fertilizer, textile, electric cable and power plants. Principal exports are cotton textiles, wood products and tobacco. *Area* : 11,100 sq. m. *Population*—2,420,000. Capital—Tirana.

ALGERIA—an independent republic in northern Africa between Tunisia and Morocco, extending about 650 miles along the Mediterranean. It was annexed in Feb. 1842 and regarded as an integral part of France. It became independent on July 3, 1962 and a Republic in Sept. 1963, with Ahmed Ben Bella as President, who was deposed in a *coup de grace*, and a 26-man Council of the Revolution presided over by Col. Houari Boumedienne assumed power on June 19, 1965.

Cattle raising is the mainstay of the people. There are large deposits of iron, zinc, mercury, copper and antimony. Export consists chiefly of wine, skins, citrus, fruits, dates, iron and zinc ores, manufactured tobacco products, barely and other cereals and vegetables. Algeria is one of the ten oil-producing nations of the world. *Area* : 919,951 sq. m. *Population*—16,280,000. Capital—*Algiers*.

ANDORRA—a small semi-independent republic on the Franco-Spanish border on the southern slopes of the Pyrenees, under the joint suzerainty of France and Spanish Catholic Bishop of Urgel. It is governed by a Council-General of 24 elected members. Tourism is the main industry. It has an abundance of iron, lead, marble, granite, alum, stone and timber. *Area* : 179 sq. m. *Population*—25,000. Capital—*Andorra la Vella*.

ANGOLA—stretches 1,000 miles along the Atlantic in south-west Africa, bordering Namibia, Zambia and Zaire. A 1961 insurrection against Portuguese rule continued until 1974, when the new regime in Portugal offered independence. Angola became independent in 1975. Angola produces 5% of world's coffee. Other products are corn, sugar, palm, oil, cotton, wheat, tobacco, etc. Angola is an important exporter of iron and diamonds. *Area* : 481,351 sq. m. *Population*—5,800,000. Capital—*Luanda*.

ARGENTINA—the second largest and the second most populous South American-republic. It is a federal union of 21 provinces which elect their own governors and legislatures, one territory (*Tierra del Fuego*) and one federal district, *Buenos Aires* whose Mayor is appointed by the President. The Constitution is modelled on that of U.S.A., but each province enjoys a large measure of autonomy. The executive is in the hands of the President who selects his Cabinet, consisting of 5 members elected for a 6-year term by direct popular vote. The National Congress consists of a Senate of 46 members, elected for 9 years, and a Chamber of Deputies of 192 members, each elected for 4 years. It became a democratic republic on 25 May, 1973 after a period of seven years (June 29, 1966) of military rule.

The mountains of Argentina contain deposits of coal, lead, zinc, iron ore, sulphur, silver, copper and gold. Argentina is a world leader in wheat, corn, flaxseed ; alfalfa grown for feed to support huge heads of cattle is the main crop. It is the world's biggest source of tannin. Meat-processing is the chief industry. Argentina is pre-eminent in the production of beef, mutton and wool. *Area* : 1,072,067 sq. m. *Population*—25,050,000. Capital—*Buens Aires*.

AUSTRALIA—The continent of Australia, a huge island, is situated in S. E. of Asia proper and below the islands of Indonesia. The Tropic of Capricorn bisects Australia. Australia is the home of Kangaroos.

The country has been settled since 1788. The Commonwealth, proclaimed on January 1, 1901, is a self-governing member of the Commonwealth of Nations, comprising a federation of six States and two territories. The executive power is vested in the Sovereign (through the Governor-General) assisted by a Federal Ministry of 26 Ministers of State headed by the Prime Minister. Parliament consists of the Senate and the House of Representatives.

Wool is Australia's greatest primary industry. It is also one of the world's largest wheat producers. Other important products include sugar, wine, fruits, vegetables, grains, meat, minerals like gold, uranium, silver, coal, copper, bauxite, lead, iron and petroleum products. Chief items of export are butter, cheese, eggs, milk and cream meat. *Area* : 2,967,909 sq. m. *Population*—13,542,100. Capital—*Canberra.*

AUSTRIA—a mountainous republic of Central Europe, abundant in forests and dotted with lakes. After 17 years of occupation between the two World Wars, Austria regained her independence by a treaty on May 15, 1955. It is composed of 9 provinces including Vienna. The President is elected directly by the people for a 6-year term. He appoints the Chancellor and approves the Ministers. The bicameral legislature consists of the *Bundesrat*, with 50 members chosen by the provincial assemblies and the *Nationalrat*, with 165 members popularly elected.

The country is primarily industrial. Raw magnesite, nitrogenous fertilizers, paper and chemical pulp are produced in large quantity. In addition motor cycles and cars, scooters, lorries and tractors are manufactured. Austria is an important source of highgrade graphite. There are also large iron-ore and oil deposits and useful deposits of brown coal, magnesite salt and lead, in the country. Although firmland is limited, Austria produces about 85 p.c. of its foodstuff. It grows wheat, rye, barley, oat, corn, potatoes, sugar beets ; principal livestock being cattle, sheep and pigs. About 38 p.c. of the total land are being forested ; timber forms a valuable source of the country's indigenous wealth. Principal exports are paper, chemicals, aluminium, iron and steel, textiles metal products, machinery and vehicles. Tourism is a large source of foreign funds. *Area* : 32,374 sq. m. *Population*—7,530,000. Capital —*Vienna.*

BAHAMAS—achieved full independence from Great Britain on July 10, 1973. The Bahamas comprise nearly 700 islands (30 inhabited) and over 2,000 islets in the Western Atlantic. There is a 38-member elected Assembly. The 16-member Senate is appointed by the Governor-General on the advice of the Prime Minister. Tourism is the main industry. *Area* : 4,404 sq. m. *Population*—200,000. Capital—*Nassau.*

BAHRAIN—consists of group of low-lying islands on the Persian Gulf, about 20 miles off the east coast of Arabia. It was an Arab sheikhdom under British protection from 1861. This British protected Persian Gulf State declared its independence on August 14, 1971. The islands are important for their oil, pearl, fisheries and strategic positioin. *Area* : 231 sq. m. *Population*—2,40,000. Capital—*Manamal.*

BANGLADESH—a low lying flat country, surrounded by India, Burma and the Bay of Bengal, is rich in jute, rice and tea. Bangladesh produces about 80 p.c. of the world's raw jute. *Area* : 55,126 sq. m. *Population*—71,316,517. Capital—*Dacca*.

BARBADOS—the smallest nation in the Western Hemisphere, it became independent within the Commonwealth on Nov. 30, 1966 after 339 years of British rule. It is the most easterly of the West Indies islands on the Atlantic, almost completely surrounded by coral reefs. Most of the islanders are Negroes.

Sugar dominates the economy of Barbados and accounts for 80 p.c. of exports ; other exports are edible oils, molasses, rum, lard and margarine. Tourist business is booming. *Area* : 166 sq. m. *Population*—2,40,000. Capital—*Bridgetown*.

BELGIUM—a kingdom of North-West Europe. The Government is a constitutional, representative and hereditary monarchy with a bicameral legislature constituting the King, the Senate, and the Chamber of Representatives. The members of the Chamber are elected directly by the electoral body for 4 years.

Belgium is the most densely populated country in Europe. Coal is the country's only important mineral. Although Belgium is essentially a manufacturing country, agriculture and forestry are also profitable industries. The main crops are oats, rye, wheat, potatoes, barley and sugar beets. *Antwerp* is the world's 4th largest port and also the world's biggest diamond-trading centre. Principal industries are coal, steel and metal products, textiles, glass, nitrogen, sugar, heavy chemicals, etc. *Area* : 11,779 sq. m. *Population*—9,757,000. Capital—*Brussels*.

BENIN—A former Overseas French Territory in West Africa, Dahomey became an independent republic within the French Community on Dec. 4, 1958 ; full independence outside the Community was proclaimed on Aug. 1, 1960. The principal exports are palm products. Principal products are palm oil, kernels, nuts, peanuts, cotton, kapok, coffee, tobacco. Small industries are bicycle plant, cotton mill, peanut oil plant. Oil has been discovered. *Area* : 43,483 sq. m. *Population*—3,030,000. Capital—*Porto Novo*.

BHUTAN—secluded on the southern flank of the eastern Himalayas the Buddhist Kingdom of Bhutan is a constitutional monarchy. The ruler has given his subjects the right to dismiss him. Though fully independent, Bhutan by a treaty of 1949 agreed to be guided by the Government of India in regard to external relations. Bhutan is a thinly populated metal products, textiles, glass, nitrogen, sugar, heavy chemicals, etc. *Area* : 19,305 sq. m. *Population*—1,634,774. Capital—*Thimphu*.

BOLIVIA—A Southern American republic, lying across the Andes. Bolivia has been under military rule since Nov. 1964, when a Military *Junta* headed by the former Vice-President and the former C-in-C of the armed forces replaced by force the National Revolutionary Movement.

The Congress consists of a Senate of 27 and a Chamber of Deputies of 102.

Agricultural products consist chiefly of rice, wheat, barley, oats, sugarcane, maize, cotton, rubber, potatoes, bananas, corn, coffee, cocoa etc. The most important industry is mining. Bolivia ranks behind Malaya in tin output. Tin ore constitutes about 70 p.c. of Bolivia's exports. There are also deposits of silver, copper, lead, zinc, petroleum, antimony, tungsten, gold, iron, asbestos, salt, sulphur and natural gas. *Area* : 424,162 sq. m. *Population*—5,470,000. Bolivia has two capitals. *La Paz* is the actual capital and sent of the government, but *Sucre* is the legal capital and the seat of the judiciary.

BOTSWANA—formerly the British protectorate of Bechuanaland this Republic is located in the centre of southern Africa. It is a vast table-land ; much of it is sand-veld. The *Kalahari Desert* spreads over the south-western region. The land is mainly suitable for cattle raising and beef is the main export. The country attained freedom on Sept. 29 1966 after being under 81 years of British protection. The legislative power of the Republic is vested in a Parliament consisting of the President and the National Assembly with 31 elected members, *Area* : 2,19,815 sq. m. *Population*—6,60,000. Capital—*Gaborone*.

BRAZIL—the largest State in South America both in area and in population. Since its discovery by a Portuguese navigator in 1500, Brazil was a colony of Portugal till Mar. 1808 when it became a kingdom under a fleeing Portuguese prince. On Nov. 15, 1889, a revolution dethroned the second emperor and established a republic.

Brazil is a federation of 22 States, with limited autonomy, a federal district, and 4 federal territories. The President is elected for 5 years. There is a bicameral legislature, Senators being elected for 8 years and Deputies (Representatives) for 4 years.

Brazil leads the world in the production of coffee and castor beans and ranks second in cocoa, sugar and oranges. The coffee crop represents three-quarters of the world's supply. There is enormous deposits of iron ore, manganese, chrome, nickel, tungsten, lead, gold, sheet mica, bauxite and monazite. Cotton weaving is the most important manufacturing industry. Its civil aviation industry is one of the largest in the world. *Area* : 3,286,470 sq. m. *Population*—107,661,000. Capital—*Brasilia*.

BRUNEI—had been since 1888 a protected sultanate on the north-west coast of the island of Borneo, between Sarawak and British North Borneo. An agreement between Britain and the Sultan in April, 1959, provided for administration separate from that of Sarawak, a written constitution, promulgated on September 29, 1959, and greater internal autonomy. Brunei is second to Canada in oil production in the Commonwealth. Brunei withdrew from the Federation of Malaysia after its Sultan protested that his title's seniority and precedence had not been given proper recognition. *Area* : 2,226 sq. m. *Population*—101,000 Capital—*Brunei.*

BULGARIA—a republic of North Europe, proclaimed in Sept. 1946 when in a one-ticket plebiscite, monarchy was abolished . The Constitution of 1947 provides that the unicameral National Assembly, *Subranie*, is the supreme organ of the Government. The Assembly is elected for 4-year term and chooses the Presidium headed by a Chairman and the Premier.

Agriculture claims a large percentage of the population. The principal crops are wheat, maize, rye, barley, oats, corn, potatoes and tobacco. There are mineral deposits of varying importance. Industries include machine tools, agricultural machinery, cranes, electric trucks and motors, etc. *Area* : 42,829 sq. m. *Population*—8,706,000. Capital—*Sofia.*

BURMA—The Union of Burma, bounded on the north and east by China, south by the Bay of Bengal and west by India, became an independent republic completely outside the British Commonwealth by a treaty effective from Jan. 4, 1948. The republican government was overthrown following a military coup on March 2, 1962, Parliament and State councils were dissolved, and a Revolutionary Council headed by a Chairman was set up.

Burma has great mineral wealth including petroleum, lead, silver tin, tungsten, zinc, and gem stones. Three-quarters of the population depend on agriculture. Rice is the economic mainstay of Burma and accounts for 70 p.c. of the export value. Other chief prdoucts are cotton, wheat, millet, tobacco, oil-seeds, grain, teakwood. etc. *Area* : 261,789 sq. m. *Population*—29,560,000. Capital—*Rangoon.*

BURUNDI—The republic of Burundi, formerly a part of the Belgian-U.N. Trusteeship of Rwanda-Urundi, became independent on July 1, 1962. It lies on the east side of Lake Tanganyika in East Central Africa. Grasslands and mountains cover most of the country's area.

Burundi was an independent constitutional monarchy. But a *coup d'etat* on Nov. 12, 1966, headed by the then premier, deposed the King and abolished the Constitution and the Parliament. Now the country is ruled by a President through the National Revolutionary Council. There are 8 provinces, each under a Governor. The economy is agricultural. The chief crop and export item is coffee. *Area*: 10,739 sq. m. *Population*—3,680,000. Capital—*Bujumbura.*

CAMBODIA—is a constitutional monarchy in South-East Asia which with Vietnam and Laos, comprised the former associated States of French Indo-China. Cambodia came under French protection in 1863. A National Constitution, promulgated on March 6, 1947, replaced the former absolutism. It became an Associated State within the French Union in 1949, but declared its independence from France on Nov. 9, 1953. It became a republic on 11th April, 1970.

Cambodia's economy is based on agriculture, fishing and forestry. Rice and rubber are the main products and items of export. Other major products include maize, pepper, palm-sugar, fish, beans, tobacco, timber, etc. 50 p.c. of the total area is forest or jungle, abounding in a variety of wild life. *Area* : 69,898 sq. m. *Population*—7,890,000. Capital—*Phnom Penh*.

CAMEROON—a federal republic on the western coast of Africa. It was German colony from 1884 to 1916. Then it came under League of Nations (now U.N.) Trusteeship and was being administered in two parts by Britain and France respectively. France offered full internal autonomy to the area administered by her on Jan. 1, 1959, and the U.N. terminated the Trusteeship on Jan. 1, 1960 when the French Cameroon became fully independent as the Republic of Cameroon. Following a referendum by the U.N. in former British Cameroons, it joined the Republic on Oct. 1, 1961 to form the Federal Republic of Cameroon. The Federal Government consist of a President, a Vice-President and 9 Federal Ministers. The Federal Assembly comprises 50 members.

The country is mainly agricultural. Principal products are cocoa, coffee, bananas, cotton, timber, leather, tea, rubber, groundnuts, palm products. Aulminium processing is the most important manufacturing industry. *Area* : 183,568 sq. m. *Population*—6,400,000. Capital—*Yaounde*.

CANADA—In 1763, the whole territory of Canada became a possession of Great Britain. The Constitution of Canada has its source in the British North America Act of 1867 which formed a Dominion under the name of Canada. Under this Act Canada came into being on July 1, 1867 (Dominion Day) and under the Statute of Westminister, which received the royal assent on December 11, 1931, Canada and the provinces were exempted from the operation of the Colonial Laws Validity Act. Now it is an independent and sovereign member of the Commonwealth, with the second largest continuous land area in the world, stretching across the northern part of the North American continent, 5,780 miles from the Atlantic to the Pacific. It is a federation of 10 provinces. The executive powers rest nominally in the hands of the Governor-General who represents the Crown and is appointed by the Sovereign on the advice of the Prime Minister and aided by a Privy Council. The Parliament consists of a Senate of 102 members, nominated for life by the Governor-General, and a House of Commons of 265 members, elected by suffrage for 5 years.

Agriculture is the most important primary industry. Wheat is the principal crop and item of export. Canada also exports newsprint, wood, wood-pulp, fish and fishery products, fur, copper ore, nickel ore. automobiles and spare parts, aluminium. It is the largest exporter of non-ferrous base metals and leads in the production of asbestos, nickel and zinc. It ranks second in uranium, gold and gypsum ; third in silver, aluminium, cobalt, titanium and platinum group ; fourth in lead ; fifth in copper and iron. Of special interest is the uranium ore mined in the northern Canada, one of the only two places so far known in the world where raw material for atomic energy can be mined easily. Canadian fishing is the most extensive and prolific in the world. The 5,000-mile Trans-Canada Highway connecting all 10 provinces is the world's longest national highway. *Area* : 3,851,809 sq. m. *Population*—22,659,000. Capital—*Ottawa*.

CAPE VERDE ISLANDS—15 in number, lie in the North Atlantic Ocean, 280 miles west of Dakar, Africa. These islands were discovered by the Portuguese in 1460. After over 500 years of Portuguese rule, the Cape Verdes became independent on July 5, 1975. *Area* : 1,557 sq. m. *Population*—290,000. Capital—*Praia*.

CENTRAL AFRICAN REPUBLIC—Formerly the French colony of Ubanghi-Shari in Equatorial Africa, this Republic lies between the Cameroon Republic and southern Sudan. On Dec. 1, 1958, Ubanghi-Shari elected to remain within the French Community and adopted this title. It became fully independent on Aug. 17, 1960. Cotton, coffee and peanuts are the main products. *Area* : 241,313 sq. m. *Population*—1,720,000. Capital—*Bangui*.

CHAD REPUBLIC—a former French Overseas Territory in Equatorial Africa, having a part of the Sahara in the north, it proclaimed independence from France on Aug. 11, 1960. It is a member of the French community. A new Constitution was adopted for a Presidential-type regime on April 14, 1962. Cotton is the main export, others are meat, hides, fish and cattle. *Area* : 495,752 sq. m. *Population*—3,950,000. Capital—*N'Djamena*.

CHILE—a South American republic along the Pacific coast, it is divided into 25 provinces. Agriculture and mining are the main occupations of the people. Fruits flourish in the central zone and form an important export item. Excellent wines are produced and exported. There is extensive cultivation of wheat, maize, hemp, tobacco, chili-pepper, barley, oats, beans, peas, potatoes, onions and melons. In Chile, the only natural nitrate in the world is found. About 47 p.c. of the world's iodine is obtained here as a by-product in nitrate processing. Chile is the world's third largest copper producer and has also large deposits of high-grade sulphur, mostly around towering extinct volcanoes in the Andes. There are also enormous deposits of iron in some provinces as well as reserves of coal.

The elected government was overthrown by a military junta in 1973. *Area* : 286,396 sq. m. *Population*—10,410,000. Capital—*Santiago*.

CHINA—is divided into two parts, with the *Republic of China* limited to Taiwan (Formosa) and the mainland under the communist regime known as the *People's Republic of China*.

REPUBLIC OF CHINA—is now confined to Formosa since 1950.

It is an island in the China Sea, 90 miles east of the mainland of China. Formosa was a part of the Chinese Empire but ceded to Japan by China in 1895, after the Sino-Japanese War. In the World War II, the U.S.A. and the U.K. promised to restore this island to China. In September, 1945, after the surrender of Japan, Chiang Kai-shek was allowed to occupy and administer the island. When in 1949, the Communist Party in the mainland became the ruling power, Chiang was forced to flee to Formosa where he established Nationalist Government of China with the support of U.S.A. on Dec. 8, 1949. Rice, sugar, tea, tobacco, bananas and pineapples are the agricultural products. Coal, iron, sulphur, petroleum, copper and gold are mined. *Area* : 13,592 sq. m. *Population*—15,902,071. Capital—*Taipei.*

PEOPLE'S REPUBLIC OF CHINA—which controls the entire mainland, was proclaimed on Sept. 21, 1949 after the defeat of the the Nationalist Army, under Gen. Chiang Kai-shek. The Communists set up a Soviet-type Government. The constitution of the People's Republic adopted by the National People's Congress in Sept. 1954, established the Congress as the highest organ of State power. Executive power is vested in the President elected for a 4-year term by the Congress. He appoints the Premier and his Cabinet. The Cabinet is the highest administrative organ. Effective control is exercised by the Central Committee of the Chinese Communist Party.

China is essentially an agricultural country, peasants constituting about 80 p.c. of the population. Rice is the staple food. Wheat, barley, millet, tobacco, sugarcane, cotton, tea, temp, jute and flax are the most important crops. The most important timber product is teak. China is one of the foremost coal producing countries in the world. Other minerals include iron ore, tin, antimony, petroleum, tungsten, salt. *Area* : 36,91,502 sq. m. *Population*—759,600,000. Capital—*Peking.*

COLOMBIA—a South American republic in the extreme northwest of South America, having a coast-line on both the Atlantic and the Pacific. The three great ranges of the Andes cut the country from north to south. Lagislative power rests with a Congress, consisting of a Senate of 106 members, and a House of Representatives of 106 members, both elected for a 4-year term. The President is elected by direct vote for 4 years.

Columbia is the second largest exporter of coffee. Rice, tobacco, cotton, cocoa, wheat, maize, sugarcane, and bananas are cultivated. Food processing and tanning are important industries. The country is rich in minerals and is a heavy producer of petroleum. Columbia produces 95 p.c. of the world's gem emeralds. Other minerals are gold, silver, copper, lead, mercury, manganese, platinum, coal, iron, limestone, salt. *Area* : 455,335 sq. m. *Population*—23,950,000. Capital—*Bogota.*

COMORO ISLANDS—are a volcanic archipelago in the Mozambique Channel. The islands were controlled by the Moslem Sultans until the French acquired them in 1841-1909. They were ruled as part of Madagascar in 1912-47, and became an autonomous French overseas territory in 1961. The Comoro Chamber of Deputies unilaterally declared the country's independence on July 6, 1975. *Area* : 838 sq. m. *Population*—300,000. Capital—*Moroni*.

CONGO, PEOPLE'S REPUBLIC OF—lies on the Equator to the west of the Zaire, with a short Atlantic Coast. Formerly the French Middle Congo Overseas Territory, it achieved independence on Aug. 15, 1960. It is a member of the French Community. The chief commercial agricultural products are palm oil, kernels, cocoa, bananas and peanuts. Forests are a prime resource of the country and wood products form a major export. The country has extensive petroleum reserves. *Area* : 132,046 sq. m, *Population*—1,031,000. Capital—*Brazzaville*.

COSTA RICA—an independent republic since 1821 in the southernmost part of Central America between Nicaragua and Panama. From 1824-39, it was a part of the Confederation of Central America. Under the present constitution, modified in Nov. 8, 1949, the legislative power is vested in a Chamber of Deputies of 57, with a 4-year term. The President, elected for 4 years, appoints a Cabinet of 9. Agriculture is the main industry. Coffee and bananas are the chief crops, followed by sugar. Minerals includes gold, silver, quartz, alabaster, granite, oil, slope. *Area* : 19,653 sq. m. *Population*—1,920,000. Capital—*San Jose*.

CUBA—an independent Central American State and the largest Island in the West Indies. It is the second largest cane-sugar producer in the world. Tobacco ranks second in importance. Cuba has extensive forests containing valuable cabinet woods, dye-woods, fibres, gums, resins and oils. Iron ore abounds. A revolution, led by Dr. Fidel Castro, overthrew the Government of Dictator Batista on Jan. 2, 1959. The constitution was suspended, and a Provisional Government with a President was set up. The country is now ruled by a Fundamental Law approved on Feb. 8, 1959, based on the 1940 Constitution with modifications for rule by a *de-facto Government*. *Area* : 44,218 sq. m. *Population*—9,090,000. Capital—*Havana*.

CYPRUS—an island in the extreme north-east corner of the Mediterranean Sea ; Cyprus was formally annexed to Great Britain on Nov. 5, 1914. Between 1925-60 it was a Crown colony. It became a republic on Aug. 16, 1960 and was elected to the British Commonwealth of Nations on March 13, 1961. The Constitution provides for a Greek Cypriot President and a Turkish Cypriot Vice-President, each elected for a 5-year term by the Greek and Turkish communities, respectively and a Council of Ministers (7 Greek and 3 Turkish) designated by the President and a House of Representatives, elected for five years and consisting of 35 Greek and 15 Turkish members. Chief agricultural products are cereals, potatoes, carrots, citrus and other dried foods, tobacco etc. Mining is an important industry. *Area* : 3,572 sq. m. *Population*—6,60,000. Capital—*Nicosia.*

CZECHOSLOVAKIA—a Communist republic of Central Europe, formed in Oct. 1918 as one of succession States of the Austro-Hungarian Empire ; it then comprised Bohemia, Moravia with Austria, Silesia, Slovakia and Ruthenia. Ruthenia was, however, ceded to Russia by a treaty on June 29, 1945. In 1948, after the establishment of the People's Republic, the old provinces, were abolished and the country was divided into 19 administrative units called regions'. Another Constitution, announced on July 11, 1960, replaced that of 1948 and recognised the nation into a highly centralised State. In January 1968 a liberalization movement spread explosively through Czechoslovakia. In July 1968 the USSR and 4 hard-core Warsaw Pact nations demanded an end to liberalization. On August 20, Russian, Polish, East German, Hungarian and Bulgarian military forces invaded Czechoslovakia. Some Soviet troops remained and Soviet pressure in late 1968 and in 1969 brought agreements from officials that the liberal policies would be "normalized". This was followed by mass demonsrtations, riots by students and workers, press censorship, etc. On January 2, 1969, Czechoslovakia became a federal state. In addition to a Federal President, Premier and Assembly for the Czechoslovak Socialist Republic, there were separate Governments, a Czech Socialist Republic and a Slovak Socialist Republic, each with a National Council, a Premier and Cabinet.

The country's natural resources developed farming, mining and industry, are great. Minerals include coal, iron, graphite, silver, copper, lead, rock-salt, aluminium and uranium. All trade and industries have been nationalised and incorporated on State or municipal organisations, *Area* : 49,371 sq. m. *Population*—14,690,000. Capital—*Prague* (Praha).

DENMARK—the oldest kingdom of Europe, is a constitutional monarchy. The King and the unicameral Parliament jointly hold legislative power (Folketing) of 179 members. The country is divided into 25 countries, each administered by a governor appointed by the king.

Agriculture is all-out important to the Danish economy. Farm produce (butter, bacon, cheese, eggs) constitute Denmark's most important export articles. Industry and handicrafts employ more workers than agriculture. Denmark substantially exports various machinery, ships, textiles, furniture, iron and steel goods, manufactured consumer's goods, etc. Its foreign trade per head of population is the largest in the world. Greenland, world's largest island, is a part of Denmark. *Area* : 17,028 sq. m. *Population*—5,130,000. Capital—*Copenhagen.*

DOMINICAN REPUBLIC—a Central African State, occupying the eastern portion of the Hispaniola, east of Cuba between the Atlantic Ocean and the Caribbean Sea. Agriculture is the main source of wealth. Sugar, coffee, cocoa and tobacco are the most important crops for export. Gold and copper are the principal among the various minerals found. *Area* : 18,704 sq. m. *Population*—4,560,000. Capital—*Santo Domingo.*

ECUADOR—a republic on the northern Pacific coast of South America. The country won independence from Spanish rule in 1822 and became a republic in May, 1830. The Constitution of 1946 was suspended following a military *coup on* July 11, 1963. President is elected for a 4-year term. The Congress consists of a Chamber of Deputy, elected for 2 years by provinces, and a Senate, elected for 4 years.

Ecuador is the world's chief source of the supply of *balsa*, a light wood. It exports more bananas than any other country. Other staple export products are cocoa and coffee. The so-called Panama hats are manufactured in Equador. *Area* : 105,685 sq. m. *Population*—6,500,845. Capital—*Quito*.

EGYPT—The history of Egypt dates back to about 4,000 B.C., when the kingdom of upper and lower Egypt, already highly civilized, were united. Egypt, itself a republic since 1953, occupies the north-east corner of Africa on the Mediterranean Sea. When the republic was proclaimed on June 18, 1953. Naguib became its first President and Premier. But Lt-Col. Gamel Abdel Nasser ousted Naguib and became Premier on April 18, 1954. On June 23, 1956 voters elected Nasser President. The United Arab Republic came into being on Feb. 1, 1958, when a Union of Egypt and Syria was confirmed by a plebiscite. Yemen joined the Federation later on. As a result of a *coup d'etat* in Syria on Sept. 28, 1961, Syria seceded from the Union. On Sept. 1, 1971 Egypt dropped the name "United Arab Republic" and declared that henceforth she would be known as the Egyptian Arab Republic. The Constitution proclaimed Egypt to be an Arab State under a republic and democratic form of government. The President has the right to propose or veto legislation ; he is assisted by 4 Vice-Presidents and a Cabinet.

Principal exports are cotton and rice. A variety of minerals is found. *Area* : 386,872 sq. m. *Population*—36,420,000. Capital—*Cairo*.

EL SALVADOR—is the smallest of the six Central American republics and the only one without an Atlantic coast. The Constitution of Jan. 1962, provides for unicameral legislature, the National Assembly of Deputies of 52 elected by popular vote for a 2-year term. Executive power is vested in the President, elected for a 5-year term. The President is assistd by a Council of Ministers nominated by him. The coffee plantations on the mountain slopes are the country's economic mainstay. *Area* : 8,260 sq. m. *Population*—3,980,000. Capital—*San Salvador*.

EQUATORIAL GUINEA—Formerly Spanish Guinea, it consists of Rio Muni (10,045 sq. m.), on the North Coast of Africa and several islands of which the largest is Fernando P.O. (785 sq. m.). Equatorial Guinea achieved independence on Oct. 12, 1968. Its agricultural products are cocoa, coffee, palm carnels and oil and timber. *Area* : 10,832 sq. m. *Population*—310,000. Capital—*Santa Isabel*.

ETHIOPIA—a republic in North-East Africa. The last Emperor of

Ethiopia, Haile Selassie I, 225th consecutive Solomonic ruler, established a parliament and judiciary system in 1931 and promulgated a new constitution in 1955 but barred all political parties. The Emperor was dethroned by the armed forces on Sept. 12, 1974. The monarchy was abolished on March 21, 1975.

The country is mainly mountainous, volcanic in origin. 90 per cent of the population depend on agriculture. Principal crops are wheat, barley, millet, tobacco and sugar. Coffee of a high quality is the chief earner of country's foreign exchange. Industries include food processing, cement, shoes and textiles. *Area* : 457,142 sq. m. *Population*—27,240,000. Capital—*Addis Ababa*.

FIJI—Fiji consists of more than 500 islands, situated in the South Pacific Ocean, about two thousand miles from Sydney, Australia. Its two largest islands are Viti Levu (4,109 sq. m.) and Venna Levu (2,242 sq. m.). Capital Suva is situated in Viti Levu. *Area* : 7,055 sq. m. *Population*—560,000. Capital—*Suva*.

FINLAND—a republic in North-Western Europe, fringed by island and dotted with lakes. An autonomous Russian State since 1809, it became independent on Dec. 6, 1917 and a republic on July 17, 1919. Parliament consists of a single Chamber, the *Eduskunta*, of 200 members, elected for a 4-year term. The voting system is designed for proportional representation. The legislative power is vested in the Parliament and the President, elected for 6 years.

70 p.c. of the total land area is forested. As such, one of the main occupations of the people is lumbering. Timber, pulp and paper industries employ of large percentage of the working population and are the chief foreign exchange earners, followed by metal and engineering industries. *Area* : 130,119 sq. m. *Population*—4,680,000. Capital—*Helsinki*.

FRANCE—a republic of western Europe. The monarchial system was oevrthrown by the French Revolution (1789-93) and succeeded by *First Empire under Napoleon* (1804-14), a *monarchy* (1814-48), the *Second Republic* (1848-52), the *Second Empire* (1852-70), the *Third Republic* (1871-1946), the *Fourth Republic* (1946-58), the *Fifth Repubilc* and *French Community* (1958-).

General Charles de Gaulle became Premier on June 1, 1958 after a crisis threatening civil war, followed by the resignation of the shortlived Cabinets and a conflict with Tunisia over the Algeria rebellion. General de Gaulle's proposed reforms were accepted by the Council of Ministers and were also approved by the voters by an overwhelming majority. The new Constitution establishing the *Fifth Republic*, provides for a strong executive branch headed by the President and a legislature composed of a National Assembly and a Senate. The President is elected for 7 years by an Electoral College appointed by the Premier and may dissolve the Assembly and call for new elections ; he may also call for referendums on specific issues and may assume full powers in a national emergency. An absolute majority vote of the Assembly is required to overthrow a Government. The President is assisted by an Eexcutive Council comprising the Premier, heads of States and certain Cabinet Ministers. Parliament consists of the National Assembly and the Senate. In June 1960, the Constitution was amended to allow member States that became sovereign but remained wihtin the Community, creating in effect a Commonwealth. The *French Community* established under 1958 Constitution of the *Fifth Republic* replaces the French Union. It consists of Departments of Metropolitan France, Overseas Departments, Overseas Territories and Republics.

Forestry is an important industry. Wine is cultivated to a great extent. The chief agricultural products are wheat, barley, maize, oats, potatoes, beat-roots, various fruits, etc. The country is rich in mineral wealth. The iron-ore deposists in the eastern region and the bauxite deposit in the central region are amongst the most extensive in the world. *Area* : 212,973 sq. m. *Population*—52,510,000. Capital.—*Paris*.

GABON—a republic on the Atlantic coast of Equatorial Africa. It proclaimed complete independence from France on Aug. 17, 1960. It is now a member of the French Community. Main agricultural crops are cocoa, coffee, rice, peanuts, palm products and bananas. *Area* : 102,317 sq. m. *Population*—520,000. Capital—*Libreville*.

GAMBIA—is the smallest nation in Africa both in population and in area. Consisting of a 300-mile strip of land along the Gambia river. It is completely surrounded by Senegal except for a small Atlantic coastline. Administered as a dependency of Sierra Leone in 1822, Gambia was given its own colonial administration in 1843 and became a Crown Colony in 1888. It became independent within the Commonwealth on Feb. 17, 1965. The Governor-General is appointed by the Queen on the advice of the Prime Minister. Parliament consists of 32 elected members, 4 elected Head Chiefs, 2 nominated members and the Attorney-General.

Groundnut is the most important cash crop, which dominates the Gambia's economy and accounts for over 90 p.c. of the country's exports ; other products include rice, millet, cattle, hides, and dried fish. There are virtually no manufacturing industries except groundnut-processing. *Area* : 4,003 sq. m. *Population*—510,000. Capital—*Banjul*.

GERMANY—As a consequence of unconditional surrender on May 8, 1945, the Governments of the United States, the Soviet Union, Great Britain and France assumed full executive power in Germany. Germany was divided into four zones of occupation under French, British, U.S. and Soviet control. The four occupying powers pledged themselves to treat Germany as an economic entity and to safeguard parallel political developments in the four zones towards restoration of truly democratic institutions. But the efforts to unify Germany were totally unsuccessful and the Western Powers were unable to agree with U.S.S.R. on any fundamental issues. So the *Federal Republic of Germany* was formed on the initiative of the three western occupying powers.

The *Federal Republic of Germany (West Germany)* came into formal existence on September 1, 1949 when Allied High Commission transferred to it the administration of the U.S., British and French zones of occupation of Germany. On May 23, 1949, the German Constituent Assembly at Bonn enacted the Constitution for West Germany. By the Constitution, the Republic was given full legislative, executive and judicial powers, but not in respect of such matters as aramments, reparations, decartelization, foreign affairs, the admission of refugees and other matters. Under the London and Paris Agreements, ratified by the three occupying powers on 5th May, 1955 the Republic attained full sovereignty and independence, though the occupying forces were given permission to remain within German territory.

At the head of the Republic is the *Federal President*, elected for a 5-year term by a specially convened body, the Federal Convention. On proposal of the President, the Federal Chancellor is elected by majority vote of the *Bundestag* (Lower House of the Parliament). Federal Ministers are nominated by the President at the instance of the Chancellor.

West Germany leads Western Europe as a steel producer. Shipyards annually produce more than 1,00,000 gross registered tons of shipping, more than half of it for export. The oil industry has a refining capacity of more than 10,500,000 tons annually. Economically, West Germany is the most powerful member of the European Common Market. *Area* : 98,815 sq. m. *Population*—62,040,000. Capital—*Bonn*.

The *German Democratic Republic (East Germany)* comprises Soviet zone of occupation of East Germany and was proclaimed on Oct. 7, 1949 with its seat at Berlin on the basis of a Constitution adpoted on May 30, 1949 by a People's Congress. The Constitution is Soviet in Soviet in nature. Under a treaty between the German Democratic Republic and the USSR in 1955, the Republic became a Sovereign State and was given complete freedom to decide all questions concerning its internal foreign policy. Parliament approved a constitutional amendment on September 12, 1960 that abolished the Presidency, replacing it with a new Council of State designated as East Germany's highest governing body, with a Chairman. *Area* : 40,646 sq. m. *Population*—17,170,000. Capital—*East Berlin*.

GHANA—A former British Gold Coast Colony, it became independent within the British Commonwealth on March 6, 1957. It became a republic within the Commonwealth on July 1, 1960 under the Presidentship of Kwame Nkrumah. Parliament voted on Sep. 7, 1962, to extend President Dr. *Kwame Nkrumah's term to cover his life-time.* Apparently it seemed that there was no political agitation or grievance against Dr. Nkrumah and that his political position was solid and leadership unquestioned. But there was great discontent amongst the people and the army. So when he was on a goodwill to tour, he was overthrown on Feb. 24, 1966 by a military *coup*. A Natioinal Liberation Council of army and police chiefs dismissed Dr. Nkrumah's ministry, suspended the Constitution and Parliament, governed the country till August 1969 when election was held and a Democratic Government was formed.

Ghana is rich in mineral wealth, including gold, manganese, diamonds and bauxite. It is the world's leading cocoa producer (about 40 p.c. of world output). Cultivation of rubber is fostered. Forest reserves are great. Exports include cocoa, timber, gold, manganese and diamonds. *Area* : 92,100 sq. m. *Population*—9,610,000. Capital—*Accra.*

GREAT BRITAIN & NORTH IRELAND—comprises England, Wales, Scotland, North Ireland of Man and the Channel Islands, lies on the north-west corner of Europe. Parliament is the legislative governing body of the United Kingdom, with certain powers over the dependent units but none the independent States. It consists of two Houses—the House of Lords and the House of Commons. The House of Lords is made up of the peers of the United Kingdom. The House of Commons has 630 members, who are elected by direct ballot and divided as follows : England 511 ; Wales & Monmouth 36 ; Scotland 71 ; Northern Ireland 12. United Kingdom is a constitutional monarchy with the Queen and a Parliament. Supreme legislative power is vested in the Parliament. The executive power of the Crown is exercised by the Cabinet, headed by the Prime Minister. U.K.'s major occupations are manufacturing and trade. The country is rich in mineral resources. *Area* : 94,209 sq. m. *Population*—55,930,000. Capital—*London.*

GREECE—lies on the Balkan Peninsula in S.-E. Europe, stretching down into the Mediterranean Sea. The Government was a constitutional hereditary monarchy. A military *coup* on April 21, 1967, suspended the parliamentary government. King Constantine led a counter-coup against the 8-month old military dictatorship on Dec. 13, 1967. But the coup was crushed and the King flew to exile. It became a Presidential Republic abolishing the monarchy on 1st June, 1973. The President will be elected directly by the people for a 7-year term. The President will have the power to nominate the Prime Minister and 20 members of the Parliament.

The country is chiefly agricultural. The important agricultural products are wheat, rye, barley, oats, rice, cotton, tobacco, citrus fruits, resins and figs. Principal industries are textiles, wine, cement, food-processing and chemicals. Greece has the third largest merchant fleet in the world. *Area* : 50,547 sq. m. *Population*—8,960,000. Capital—*Athens.*

GRENADA—Southernmost in the long arc of the Windward Islands. Grenada lies in the south-east Caribbean, 90 miles north of the Venezuelan coast. Formerly a British Associated State with limited self-government, Grenada became fully independent on Feb. 7, 1974. The economy is agricultural. Main products are nutmegs, bananas, cocoa, and sugar. *Area* : 133 sq. m. *Population*—110,000. Capital—*St. George's.*

GUATEMALA—a republic of Central America. Under the Constitution, promulgated on Sept. 15, 1965 following a military *coup*, the administration is carried on, under the President, by the Council of State of 14 members. Coffee accounts for the bulk of the export. Other important export crops are bananas, cotton and sugar. *Area* : 42,042 sq. m. *Population*—5,540,000. Capital—*Guatemala City*.

GUINEA—Formerly a part of French West Africa, Guinea is situated on the west coast between Portuguese Guinea and Sierra Leone. It was proclaimed an independent republic on Oct. 2, 1958. The nation's first Constitution, adopted on Nov. 12, 1958, provided for rule by a President with a 7-year term, and a Cabinet.

Guinea has possibly the world's largest deposits of bauxite. Chief agricultural products are rice, palm-nuts, bananas, coffee, groundnuts, millet, pineapples. It exports coffee, honey, bananas, iron and aluminium ore. *Area* : 94,925 sq. m. *Population*—4,310,000. Capital—*Conakry*.

GUINEA-BISSAU—Portuguese Guinea, a colonial possession of Portugal, achieved independence as Guinea Bissau, a republic, on Sept. 10, 1974. It is in West Africa. *Area* : 13,948 sq. m. *Population*—520,000. Capital—*Bissau*.

GUYANA—Formerly known as British Guiana, it is situated on the north-east cost of South America on the Atlantic. After remaining 152 years as a British dependency it became independent within the Commonwealth on May 26, 1966. It became a republic on 23rd February, 1970. There is a unicameral legislature, the National Assembly of 53 members, elected for 4 years.

About 87 p.c. of the land area is forested. Agriculture is the main livelihood of the population. Chief cash crops are rice and sugar. Other products include coconuts, coffee, cocoa, citrus fruits, rum, molasses, timber. There are also deposits of gold, iron, diamonds, manganese and mica. Mining of bauxite ore is the main industry ; Guyana is the world's 4th largest producer of bauxite. Population consists mainly of East Indian and Negro descent. *Area* : 83,000 sq. m. *Population*—770,000. Capital—*Georgetown*.

HAITI—a republic of the Caribbean occupying western third of the island of Santo Domingo, formerly known as Hispaniola. It is the only Negro French speaking republic in western hemisphere. The country's natural resources are very poor. Chief cash crop is coffee. Other products are sisil, cotton, raw sugar, bananas, cocoa, tobacco and rice. Molasses and rum are produced. Valuable woods are exported. Major mineral exports are bauxite and copper. *Area* : 10,714 sq. m. *Population*—4,510,000. Capital—*Port-au-Prince*.

HONDURAS—a republic of Central America. The Constitution provides for a President and a unicameral legislature, Congress of Deputies, each with a 6-year term. The chief agricultural products are coffee, cotton, maize, sugarcane, beans, bananas. Honduras has abundance of hard and soft-woods. Minerals include gold, silver, copper, 9, 1965 and became a member of the Commonwealth. *Area* : 226 sq. m. *Population*—2,236,000. Capital—*Singapore*.

SOMALIA—a republic occupying part of the north-east horn of Africa, with a coast-line on the Indian Ocean. The republic comprising the former British Somaliland Protectorate and former Italian-UN by a President elected for a 6-year term by National Assembly of 123 Trusteeship of Somalia, was proclaimed on July 1, 1960. It is governed by a President elected for a 6-year term by National Assembly of 123 Deputies elected for a 5-year term. Principal products are sugar, bananas, sarghum, corn, gum, hides, kapok. *Area*: 246,155 sq. m. *Population*—3,090,000. Capital—*Mogadishu*.

SOUTH AFRICA—a republic occupying the southernmost part of the African continent. It consists of the following provinces—Transvaal, Cape of Good Hope, Orange Free State, and Natal. The capital of the Union is Pretoria, though Union's legislature meets in Cape Town. It was a member of the British Commonwealth up to 1960, from which it seceded in 1961, due to its aparthied policy. It became a republic on May 31, 1961. The President is chosen by an electoral college composed of members of the Senate and House of Assembly, for a 7-year term. The Senate of 50 members and the Assembly of 160 are elected for 5-year terms.

South Africa leads the world in the production of gold, diamonds, platinum and antimony, and is one of the richest in uranium, vanadium, chrome, manganese and asbestos. *Area* : 471,819 sq. m. *Population*—24,920,000. Capital—*Pretoria* (administrative) ; *Cape Town* (legislative).

SPAIN—occupies almost the entire Iberian Peninsula in western Europe and is separated from France by Pyreness mountain. Spain had a dictatorial form of Government under General Franco, who was the Chief of the State, national chief of the Falangist Party, Prime Minister, Commander-in-Chief and *Caudillo* (leader) of the Empire. Practically, the country was ruled by the Cabinet (appointed by Franco), the National Council of the Falangist Party and, to a lesser extent, the *Cortes* (Parliament). The principal function of the Cortes is the planning and formation of laws without prejudice to Franco's veto power. On April 1, 1947, Franco himself declared Spain a kingdom again. He was to remain Head of the State, and upon his death or incapacity, the Government and a Council of the Realm constituted by the law, would nominate as king "that person of royal blood who is most qualified by right" subject to the approval of the Cortes. In July 1969, Prince Juan Carlos, having such, qualifications had been nominated to succeed Franco. In 1973 Franco appointed a Prime Minister. In November 1975, upon Franco's death, Prince Juan Carlos became the King of Spain.

Spain has an abundance of minerals. Industries include cotton and woollen goods, paper, automobiles, cement and cork, wine-making, etc. *Area* : 194,883 sq. m. *Population*—35,220,000. Capital—*Madrid.*

SRI LANKA—formerly known as Ceylon it is an island in the Indian Ocean, 31 miles off the southern tip of India. India as its close point. In 1505, the Portuguese landed in Ceylon and founded settlements, eventually conquering much of the island. In 1658, Portuguese rule gave place to Dutch East India Company. Ceylon became a British Crown Colony in 1802. On Feb. 4, 1948, it became a self-governing Dominion within the Commonwealth of Nations. It became a republic within the Commonwealth on 22 May, 1972. All legislative, executive and judicial authority are vested in the National State Assembly. Within the Assembly, the real seat of power is the Cabinet, headed by the Prime Minister. The legislature is unicameral. The life of it is six years.

The principal agricultural products are tea, rubber, coconuts, cocoa, rice, cinnamon and tobacco. Sri Lanka now exports more tea than any other country in the world. Minerals and metals include iron, graphite, limestone, quartz and some precious stones. Manufacture include plywood, paper, glassware, ceramics, cement, chemicals, textiles, fertilisers and vegetable oil products. *Area* : 25,332 sq. m. *Population*—13,680,000. Capital—*Colombo*.

SUDAN—a republic in North-East Africa. By virtue of the Condominium Agreement between England and Egypt and of the Anglo-Egyptian Treaty of 1936, Sudan was ruled by a Governor-General on the joint behalf of Great Britain and of Egypt. On Feb. 12, 1953, an Anglo-Egyptian Agreement guaranteed to the Sudanese the right to determine their own future and reserved the sovereignty of Sudan until the day of self-determination for the Sudanese. On Dec. 19, 1955, the Sudanese House of Representatives voted unanimously for a declaration for Sudan[illegible] complete independence. On Jan. 1, 1956, it was proclaimed a republic and was recognised by both Great Britain and Egypt. But a *coup d'etat* on November 17, 1958, suspended the Constitution, dissolved the Parliament, and set up a Supreme Council of the Armed Forces and a Council of Ministers. In October 1964, a civilian Cabinet was appointed, and after the resignation of President Abboud in the following month, a Supreme Council of State with 5 members, was set up. In May 1969, in a second military *coup*, a Revolutionary Council took power but a civilian premier and cabinet were appointed.

Most part of the country is desert. It is the world's principal source of gum arabic. *Area* : 967,491 sq. m. *Population*—17,324,000. Capital—*Khartoum*.

SURINAM—is on the north coast of South America. The Netherlands acquired Surinam in 1667 from Britain. In the 1970's the Dutch Government pressured for Surinam's independence, which was scheduled lead, zinc, iron and antimony. *Area* : 43,277 sq. m. *Population*—2,930,000. Capital—*Tegucigalpa.*

HUNGARY—a Central European Communist republic formed out of Austro-Hungary ; it is the abode of the Magyars. The Soviet-type Constitution, adopted by the Parliament on Aug. 18, 1949, declared Hungary to be a "People's Republic". The supreme organ in State control is Parliament with Deputies elected for 4 years by direct vote. When Parliament is not in session, power is exercised by the Presidium headed by the Chairman. Executive power is vested in the Cabinet, headed by the Premier. Hungary has one of the largest bauxite deposits in the world. *Area*: 35,919 sq. m. *Population*—10,460,000. Capital—*Budapest.*

ICELAND—an island of volcanic origin in the North Atlantic, close to the Arctic Circle. It was proclaimed a republic on June 17, 1944. Constitutionally, the *President* is elected for 4 years by popular vote. Executive power of the State resides in the Prime Minister and his Cabinet. The *Althing* (Parliament) is composed of two Houses. Iceland has no army or navy of its own ; but under the North Atlantic Treaty Organisation and by the 1951 Agreement, U.S.A. maintains on the island its army, navy and air forces. Fishing is the most important industry. *Area* : 39,702 sq. m. *Population*—220,000. Capital—*Reykjavik.*

INDONESIA—is a republic of S.-E. Asia, comprising territory formerly known as the Dutch East Indies. Indonesia comprises about 3,000 island and islets, the largest four being Java, Sumatra, West Borneo and Celebes. It is one of the richest countries in natural resources. There are vast supplies of tin, oil and coal and sizable deposits of bauxite, sulphur, manganese, copper, nickel, gold and silver. It is the main producer of petroleum in the far east. It rivals Malaysia in its output of rubber and tin. Agriculture occupies 80 p.c. of the population. There are many textile factories, big paper factories, match, tyre, glass and chemical factories, automobile and bicycle assembly works, etc.

From the early part of the 17th century much of the Indonesia Archipelago was under Dutch rule. Following Japanese military occupation in 1942-45, Nationalists proclaimed a republic on Aug. 17, 1945. Four years of intermittent warfare between Dutch and Indonesian forces was terminated by agreements, signed on Nov. 2, 1949, transferring sovereignty all over Indonesia, except Netherlands New Guinea to the new interim government known as the Republic of the United States of Indonesia, effective on Dec. 27, 1949. In Aug. 1950, a unitarian State was proclaimed, and its name was formally changed to Republic of Indonesia. Mounting economic and political unrest caused President Sukarno to issue a decree on July 5, 1959 dissolving the Constituent Assembly and reinstating the 1945 Constitution which gave him almost unrestricted power as President-Premier, with a policy of 'guided democracy' for the country. He was named *President for life* on May 18, 1963.

On Sept. 30, 1965, a pro-communist *coup* almost toppled the regime of Sukarno. In the bloody uprising that followed, Army took control of the country and the Government, and Sukarno's powers curtailed. On March 12, 1966, the military commanders under the leadership of Gen. Suharto took over the executive power, leaving Sukarno as the nominal head of State. On July 5, 1966, the once all-powerful Sukarno was stripped of his life Presidency. On March 12, 1967, Gen. Suharto was made Acting President with full powers. He was officially named President for a 5-year term by the Provisional People's Consultative Congress on March 27, 1968. *Area* : 735,268 sq. m. *Population*—127,590,000. Capital—*Djakarta*.

IRAN—a kingdom of western Asia, also known as *Persia*. Iran is a constitutional monarchy. Executive power is exercised by a Cabinet, headed by the Prime Minister who is appointed by the Shah and is responsible to the Majlis (Parliament) which is elected for a 4-year term and has 200 popularly-elected members. The Shah has power to dissolve the Majlis.

Most of the conutry is deserted and mountainous. Petroleum is the principal product and by far the biggest item of export. Iran is now the world's fourth largest oil producer. Agricultural products include wheat, barley, corn, rice, fruits, nuts, gums, tobacco, raw silk, cotton, oilseeds. *Area* : 636,363 sq. m. *Population*—31,960,000. Capital—*Teheran*.

IRAQ—an Arab republic in the Middle East, formerly known as Mesopotamia ; created as a result of World War I when under the Treaty of Lousanne (1923) Turkey renounced the sovereignty over Mesopotamia. The League of Nations gave a mandate to Britain, which ended in 1932 when Iraq was recognised as sovereign State. A constitutional monarchy was created in 1924. During a *coup d'etat* on July 14, 1958, the King was assassinated and Iraq was proclaimed a "Part of the Arab nation" by revolutionary council. A republican form of government was established by Brig. Kasim. On Feb. 8, 1963, the Kasim regime was overthrown by a further *coup* and Kasim was executed. A provisional constitution, announced on May 3, 1964, provided for a 3-year transition period and strong ties with U.A.R.

Iraq is one of the great oil-producing countries of the world. Wheat, barley, rice, millet and cotton are the main crops. There is also cultivation of tobacco and dates. *Area* : 167,567 sq. m. *Population*—10,770,000. Capital—*Baghdad*.

IRELAND—an island in the Atlantic, separated from Great Britain mainly by the Irish Sea on the east. It is a sovereign, independent and democratic State since 1937. The Parliament (*Oierachtas*) consists of the President, elected for 7 years by direct vote, and two Houses : the *Dail Eireann* of 144 members, elected by universal suffrage on a basis of proportional representation, and the *seanad Eireann* of 60 members. The President is aided, and advised by a Council of State. The country is predominantly agricultural. Important crops are potatoes, wheat, barley, oats, rye, cabbage, sugar beets and flax. Major industries are tobacco, textiles, chemicals, metals, food processing etc. *Area* : 26,600 sq. m. *Population*—3,090,000. Capital—*Dublin*.

ISRAEL—lies on the western edge of Asia, bordering on the Mediterranean Sea. This Jewish State in Palestine was established in 1948 in fulfilment of the aspirations of Zionism and following a decision of the U.N. Assembly on the partition of Palestine between Jews and Arabs. It occupies the major portion of Palestine. On Nov. 2, 1917, the British Government made a declaration known as the *Balfour Declaration*, which viewed with favour the establishment in Palestine of a home of the Jewish people. This principle was incorporated in the mandate to Britain, which came into force on Sept. 29, 1923. The British mandate on Palestine ended at midnight of May 14, 1948 when the Jewish National Council proclaimed a Jewish State of Israel. This immediately led to the war against Israel by the Arab States. But armistice agreement signed under U.N. auspices in 1949, terminated the hostilities and left Israel as an independent State. In June 1967, full-scale war again broke out between Israel and several Arab countries resulting in Israel's vistory and its occupation of a large part of the Egyptian territory and complete control over Jerusalem.

The Government is parliamentary democracy. Under the Constitution of 1949, supreme authority is vested in a one-chambered Parliament called the *Knesset*, with 120 members elected by universal suffrage for a 4-year term. The Cabinet is resposible to the Knesset. A President, elected for 5 years by the Knesset, heads the Government.

Israel has abundant deposits of minerals like gypsum, limestone, sandstone, copper, iron, phosphates, magnesium, manganese, ceramic clays. Rock salt, sulphur and potash are found in the valley of Jordan and in the Dead Sea. Southern Israel is a vast wedge-shaped desert called the Negev. It has vast phosphate deposits, oil, copper, potash and natural gas. Cirtus fruits are the chief and most valuable agricultural product. Other principal products are wheat, barley, olives, melons, grapes, bananas, cotton, etc. Tourism is second only to citrus products in foreign exchange earnings. Wine-making is an extensive industry. Main exports are citrus fruit, fruit-juices, textiles, wines and liquors, autos and tyres, chemical and pharmaceutical products, building materials, polished diamonds, electrical goods. *Arae* : (pre-1967) 8,017 sq. m. ; (post-1967) over 30,000 sq. m. *Population*—(Govt. est. 1974, pre-1967 territory) 3,330,000. Capital—*Jerusalem*.

ITALY—a republic of Europe stretching S.-E. from the Alps into the Mediterranean Sea, with the islands of Sicily, Sardinia, Elbe and 70 smaller ones. The President is elected for 7 years by the Parliament in a joint session. The Cabinet, headed by the Premier and nominated by the President, must enjoy the confidence of the Parliament which is composed of the Chamber of Duputies, popularly elected for a 5-year term, and the Senate, for a 6-year term.

Italy is ordinarily the world's largest producer of mercury ; it is also an important producer of sulphur. Chief agricultural products are wheat, sugar-beets, potatoes, corn, grapes and tomatoes. Italian wines have great variety. There is large production of industrial and electrical machinery, automobiles, steel products, chemical, synthetic fabrics, shoes and machine tools in Italy. The largest industry is textiles. Silk culture is carried on all over the country. *Area* : 116,303 sq. m. *Population*—55,586,000. Capital—*Rome*.

IVORY COAST—a former French Overseas Territory on the Gulf of Guinea in West Africa. In accordance with provisions of the 1958 French Constitution, it became fully independent on Aug. 7, 1960. It elected to remain outside the French Community proper, but signed a bilateral agreement on April 24, 1961, retaining close ties with France. A President heads the government. Legislative powers are vested in a National Assembly of 85 members, elected every 5 years. 90 p.c. of the population depend on agriculture, forestry, stock raising and fishing. Chief export products are coffee, cocoa, timber and bananas. *Area* : 124,503 sq. m. *Population*—4,770,000.—Capital—*Abidjan*.

JAMAICA—an island in the West Indies. It was discovered by Columbus on May 4, 1494 and occupied by the Spanish until capture by the British in 1655. In 1670 it was formally ceded to England. After remaining nearly three centuries as British dependency, it achieved independence on August 6, 1962 and became the 14th member of the Commonwealth. The Parliament consists of a Governor-General representing the sovereign, a Senate of 21 nominated members and a House of Representatives of 53 members, elected popularly for 5 years. Jamaica is now the world's largest producer of bauxite. Other products include sugar-cane, coffee, bananas, coconuts, cocoa, citrus fruits, cigars, etc. *Area*: 4,411 sq. m. *Population*—2,000,000. Capital—*Kingston*.

JAPAN—an empire of Asia, situated on several islands in the North Pacific of the coast of China and Siberia. It consists of 4 main islands : *Honshu* (mainland), *Hokkaido*, *Kyushu* and *Shikoku*. Rice is the staple food of the people. The country is rich in flora. Fruit is abundant. Japan is the most highly industrialized nation in the Far East. Major exports are clothing, metal products, plywood, toys, chemical fertilizers, ships, silk, rolling stocks, cement, textiles, automobiles. Japan continues to be the biggest ship-building nation and the fourth largest auto maker in the world.

Under the Constitution promulgated on Nov. 3, 1946 and effective on May 3, 1947, the Emperor is acknowledged as hereditary national symbol. Legislative authority rests with the *Diet* which is bicameral, consisting of a House of Representatives with 467 members elected for 4 years and a House of Councillors with 250 members elected for 6 years. Executive authority is vested in the Cabinet which is responsible to the legislature. The Japanese Peace Treaty came into force on April 28, 1952. Japan hereupon resumed its status as a sovereign and independent power. *Area* : 143,574 sq. m. *Population*—109,670,000. Capital—*Tokyo*.

JORDAN—a Kingdom in western Asia, formerly under the Palestine Mandate and known as Trans-Jordan. Conquered from the Turks by the British in World War I, Jordan was separated from the Palestine Mandate and placed, in 1921, under the rule of Abdullah Ibn Al Hussain. In 1923, Britain recognised Jordan's independence, subject to the Mandate. During World War II, Jordan co-operated completely with Britain. On March 22, 1946, Britain abolished the Mandate and recognised Jordan as a sovereign independent State. The Government is a constitutional monarchy. The executive consists of a Council of Ministers and the legislature of a Senate of 30 nominated by the King and a House of Representatives of 60, elected by manhood suffrage. The Cabinet is responsible to the Parliament. The country is for most part, desert. The north-eastern part has agricultural potentialities but is entirely dependent on rainfall. Its only industrial products is raw phosphate. *Area*: 37,297 sq. m. *Population*—2,620,000. Capital—*Amman*.

KENYA—A former British colony and protectorate in East Africa, it became independent within the Commonwealth on Dec. 12, 1963 and a republic in Dec. 12, 1964. The President heads the Government. The National Assembly has two Houses, the Senate and the House of Representative. Three-fifths of the country is arid. Important agricultural crops are coffee, tea, sisal maize, wheat, coconuts, cashew-nuts, cotton and sugar. Kenya is the largest producer of tea in Africa. Principal minerals include gold, copper, limestone, gypsum, etc. *Area* : 224,960 sq. m. *Population*—12,910,000. Capital—*Nairobi*.

KOREA—a North-East Asia country on a mountainous peninsula between Manchuria and Japan. It was a vassal of China for 500 years and was annexed by Japan in Aug. 1910. Following the defeat of Japan in 1945, is was occupied by USA and USSR. After the end of the World War II, at the Potsdam Conference in 1945, the 38th parallel of latitude was designated as the line dividing the Soviet and the American zones of occupation.

NORTH KOREA—On May 1, 1948, the Communists formed the *People's Democratic Republic of Korea* in North Korea. It has a typical Soviet-type Constitution adopted on Sept. 2, 1948. On June 25, 1950, the North Korea, Army crossed the 38th parallel and invaded South Korea. The U.N. Security Council demanded immediate withdrawal of the North Korean Army. U.S.A. entered the war in support of South Korea. China joined the side of North Korea on Nov. 26, 1950. The true talks between the combatants continued in 1952 and 1953 amid sporadic hostilities. An armstice was signed finally at Panmunjon on July 27, 1953. It contemplated an international political conference on the status of Korea but negotiations for arranging it broke down. The question was discussed without result at the Geneva Conference on Far Eastern problems (April 26—June, 19, 1954).

Most of the land is mountainous and forested. Rice is the main aricultural product. North Korea has fairly well-developed sufficient mineral resources. It is a leading country in the output of tungsten, graphite and magnesite. *Area* : 46,768 sq. m. *Population*—15,440,000. Capital—*Pyongyang*.

SOUTH KOREA—is a republic with legislative powers vested in a unicameral Parliament and executive power in a popularly-elected President and a Cabinet headed by a Premier. It is chiefly an agricultural country, the main crops being rice, barley, wheat, cotton, tobacco and beans. Mineral deposits are insufficient with the exception of tungsten. Several indutries like timber, rubber, glass, ship-building, electronics and silk are expanding rapidly. *Area* : 38,031 sq. m. *Population*—33,460,000. Capital—*Seoul*.

KUWAIT—is a small Arab State formerly under British protection. It became fully independent on June 19, 1961. It extends along the northern end of the Persian Gulf from Iraq to Saudi Arabia. Petroleum is the economic mainstay of Kuwait. It is the world's second largest exporter and fourth largest producer of crude oil. The country is ruled by an *Amir* ; but all laws are passed by the National Assembly of 50 members. The Prime Minister is appointed by the Amir. *Area* : 7,780 sq. m. *Population*—930,000. Capital—*Kuwait City*.

LAOS—an independent sovereign republic in S.-E. Asia. It is one of the three former French Indo-Chinese States. It became a French protectorate in 1893 and a member of the Indo-Chinese Union in 1899. It became an independent sovereign State within the French Union on July 19, 1949. The regime was recognised in the cease-fire agreement with France on July 21, 1954. It is being ruled by a Coalition Government from June 23, 1962. Legislative power is vested in a National Assembly elected every 5 years.

The country is mountainous and densely forested in places. The chief agricultural products are rice, amize, tobacco, citrus fruits, tea, coffee, cardamom, potatoes, chinchona and sticklac. Opium is an important source of revenue. *Area* : 91,429 sq. m. *Population*—2,965,000. Capitals—*Vientiane*, *Luang Prabang*.

LEBANON—a republic in the Middle East, occupying a strip of land along the Mediterranean coast, sandwiched between Israel in the south and Syria in the north and east. This smaller Arab State was formed out of the five former Turkish Empire districts of North Lebanon, Mount Lebanon, South Lebanon, Beirut and Bekka. Along with Syria, it became an independent State on Sept. 1, 1920. Both were administered under French mandate till Nov. 1941. Lebanon is a free democratic country with a popularly-elected government. The executive consists of a President, a Prime Minister and a Cabinet appointed by him. The President must be a Christian, the Premier a Moslem. There is a unicameral legislature (Chamber of Deputies) of 99, elected every 4 years. Chief crops are apples, citrus fruits, alives, tobacco, grapes, vegetables, cereals. Important manufacturing products are textiles, leather goods, cement, oil refining and food product. *Area* : 4,015 sq. m. *Population*—2,780,000. Capital—*Beirut.*

LESOTHO—Formerly known as *Basutoland*, Lesotho is an enclave within the Republic of South Africa. It became independent on Oct. 4, 1966. For administrative purposes the territory is divided into 9 districts. As a result of constitutional reforms, which came into operation in April 1965, the territory has a Cabinet, which is the main policy-making body, and a Parliament of 60 members. Main agricultural products are maize, sarghtuim, barley, beans and peas. Main industry is livestock raising which produces wool and mahair, the chief exports. *Area* : 11,716 sq. m. *Population*—1,020,000. Capital—*Maseru.*

LIBERIA—the oldest Negro republic of West Africa on the Guinea coast. Most of the country is covered with tropical forests, rich in timber and oil nuts. Rice, coffee and sugarcane are cultivated.

Liberia was founded in 1822 by the American Colonization Society as a country for freed slaves from U.S.A. and became an independent republic on July 26, 1847. The Government is modelled on that of the U.S.A. The executive power is vested in a President and a Cabinet. The President is elected for a 8-year term. Parliament consists of a Senate of 18 members elected for 6 years and the House of Representatives, of 52, elected for 4 years. *Area* : 43,000 sq. m. *Population*—1,670,000. Capital—*Monrovia.*

LIBYA—a North African State, comprising Tripolitania, Cyrenaica and Fezzan, with a Mediterranean coast-line of nearly 1000 miles between Egypt and Tunisia and stretching approximately the same distance south to the Sahara. The greater part of the country is desert and barren. In 1912, an Italo-Turkish war left Libya in Italian hands. After the defeat of Italy in 1943 in the World War II, Tripoli and Cyrenaica remained under British and Fezzan under French military Governments. In conformity with a resolution of the General Assembly of the U.N. on Nov. 21, 1949, Libya became, on Dec. 24, 1951, the first independent State created by the U.N. Libya had a hereditary monarchy under King Irdis I till Sept. 1, 1969 when in a military *coup de grace* the King was ousted, monarchy was declared abolished and the State was proclaimed a republic. On Aug. 29, 1973 it merged with Egypt. Major oil-fields have been discovered in the country. Chief agricultural products are olives, lemons, almonds,, figs, grapes and tobacco *Area* : 679,536 sq. m. *Population*—2,350,000. Capitals—*Tripoli* and *Benghazi.*

LIECHTENSTEIN—an independent Alpine principality between Austria and Switzerland. It is a hereditary monarchy. The Constitution of 1921 provides for a legislature called *Diet*, of 15 members.

elected for 4 years. *Area* : 62 sq. m. Population—23,700. Capital—*Vaduz.*

LUXEMBOURG—an European Grand Duchy situated between Germany, Belgium and France. It was given its present rank as principality by the Congress of Vienna in 1815. It is governed under the Constitution of 1868, with modifications. Legislative power rests with Council of State of 21, chosen for life by the sovereign, and a Chamber of Deputies of 56, elected by universal suffrage with executive power delegated to a Minister of State and a Cabinet of at least 3 Ministers. *Area* : 999 sq. m. *Population*—340,000. Capital—*Luxembourg.*

MALAGASY—Formerly called *Madagascar*, Malagasy Republic is the world's fourth largest island in the Indian Ocean, off the S.-E. coast of Africa, from which it is separated by the 250-mile wide Mozambique Channel. It was a French protectorate since 1885. Constitutional reforms introduced in 1957, gave the island internal autonomy, and it become an autonomous republic within the French community on Oct. 14, 1958. It became an independent member of the French Community on June 26, 1960. The Constitution provides for a National Assembly of 107 and a Senate of 52 members.

Cattle-breeding and agriculture are the chief occupations of the people. The chief crops being Vanilla, rice, beans, maize, coffee, cloves, tobacco, sugarcane and cocoa. The forests contain many valuable woods and abounds in gums, resins and plants for tanning, dyeing and medicinal purposes. *Area* : 203,035 sq. m. Population—7,655,134. Capital—*Tananarive.*

MALAWI—Following a conference on reform of the constitution of the Federation of Rhodesia and Nyasaland held in London in November 1962. Nyasaland assumed internal self-government on Feb. 1, 1963 and became an independent State under the name *Malawi* in July 6, 1964. The new State became a republic within the Commonwealth on July 6, 1966. There is a Cabinet consisting of the Prime Minister and 9 other ministers. The National Assembly has 50 members elected by voters on a general roll and 3 members elected by the European community on a special roll. *Area* : 45,747 sq. m. *Population*—4,900,000. Capital—*Lilonqwe.*

MALAYSIA—The Federation of Malay became an independent country within the Commonwealth on August 31, 1957, following an agreement between the Queen of England and the Rulers of Malay States. On Sept. 16, 1963, the Federation was enlarged by the accession of the further states of *Singapore*, *Sarawak* and *British North Borneo* (renamed Sabah), and the name of Malaysia was adopted from that date. Brunei withdrew from the proposed Federation on July 9, 1963. Singapore seceded from the proposed Federation on Aug. 9, 1965 (*see Singapore*).

Malaysia is a 138-sq. mile crescent stretching from Thailand across

South China Sea to the backdoor of the Philippines. About 75 p.c. of the total area is forested and mountainous. The country is essentially agricultural. It is the world's largest producer of rubber and tin. Other items of exports includes iron ore, timber, palm oil copra, pepper, etc.

Malaysia is a limited constitutional monarchy, with a Paramount Ruler of Supreme Head of State, elected for 5-year term by the Rulers of different States among their number, and a Deputy Supreme Head of State, similarly elected. Legislative authority is vested in a Parliament consisting of two Houses, the Senate of 58 members under a President, and the House of Representatives of 144 members. *Area* : 128,328 sq. m. *Population*—11,700,000. Capital—*Kuala Lumpur*.

MALDIVES, REPUBLIC OF—a group of 19 atolls containing 1,087 tiny coral island in the Indian Ocean, 420 miles south-east of Indian coast, of which only 220 are inhabited. There are 22 clearly defined clusters of atolls separated from each other by deep channels. Formerly, it was a dependency of Ceylon and thereafter a British protectorate since 1887. Complete independence was proclaimed on July 26, 1965. The Maldive was a Sultanate. The country became a republic on Nov. 11, 1968, with a popularly elected President and legislative (*Majlis*). The islands produce coconuts, fruits and nuts, and millets. But Maldivian economy is based on the fishing industry. The people are all Moslems. *Area* : 115 sq. m. *Population*—122,673. Capital—*Male*.

MALI, REPUBLIC OF—an island State in North-West Africa. Formerly the French colony of Sudan, this territory elected on Nov. 24, 1958, to remain as an autonomous republic within the French Community. On Jan. 17, 1959, it formed with neighbouring Senegal the Federation of Mali which was granted full independence on June 20, 1960. Senegal withdrew from the Federation on Aug. 20 same year and the name of *Republic of Mali* was adopted in September. Though it is no longer a member of the French Community, it maintains economic and cultural relations with France. A bloodless army *coup* on Nov. 19, 1968, ousted the ruling President Modibo Keiat, and a 14-man military national liberation committee took control of the country. *Area* : 464,873 sq. m. *Population*—5,560,000. Capital—*Bamako*.

MALTA—a small island in the Mediterranean Sea, 58 miles south of Sicily. It was connected with Sicily from 1090 A.D. Napoleon conquered this island in 1798. It was annexed to Great Britain in 1814. It was a base for the British fleet. Malta voted integration with great Britain in 1956, but negotiations broke down. On September 21, 1964. Malta became an independent State within the Commonwealth. It became a republic on Dec. 13,1974. It has an elected legislature of 50, from whom a Prime Minister and a Cabinet are selected. *Aera* : 122 sq. m. *Population*—315,756. Capital—*Valetta*.

MAURITANIA, ISLAMIC REPUBLIC OF—lies on the north-west coast of Africa between Senegal and Spanish Sahara. A former French Overseas Territory, Mauritania became, under the provisions of the 1958

French Constitution, an autonomous State on Nov. 28, 1958 and fully independent on Nov. 28, 1960. It elected to remain outside the French Community, but retain close ties with France. A government of Council of ministers administers the Republic. The National Assembly consists of 34 members. The chief agricultural products are dates, grain, tobacco, fish. There are large herds of cattle, camels, sheep and goats. There are large deposits of iron and copper. *Area* : 419,229 sq. m. *Population*—1,290,000. Capital—*Nouakchott.*

MAURITIUS—This tiny island in the Indian Ocean, 575 miles east of Malagasy, was discovered in 1511 by the Portuguese. The Dutch, who visited the island in 1598, named in Mauritius. They set up a colony on the shore in 1698, but abandoned it 1710. In 1715, the French settlers took possession of the island. The British force captured it in 1810. Independence was proclaimed on March 12, 1968.

The economy of Mauritius is based almost entirely on a single commodity-sugar, which accounts for over 95 p.c. of the island's trade. Most of the population are of Indian origin. *Area* : 787 sq. m. *Population*—875,000. Capital—*Port Louis.*

MEXICO—a federal democratic republic on the southern part of the North American continent. It comprises 29 States, with President, legislature and judiciary elected by universal suffrage, 2 territories with governors appointed by the President, and a federal district containing Mexico City. The President is elected for six years and governs with a Cabinet of Ministers. The Federal Congress has two Houses—*Chamber of Deputies* of 210 members and *Senate* of 60 members, elected for 6 years.

Mexico has vast mineral wealth and produces petroleum, silver, gold, copper, lead, quick-silver, antimony, zinc, mercury, sulphur, arsenic, iron and coal. It is the world leader in the production of silver, sisal, hemp and circle for chewing gum. Agriculture, stock raising, and fishing are important. Main crops for export are cotton, coffee, sugarcane, frozen meat and tomatoes. Mexico's forests are of considerable importance. Forest products include turpentine, resins and vegetable wax. *Area* : 761,601 sq. m. *Population*—58,120,000. Capital—*Mexico City.*

MONACO—a tiny independent principality in the South France. On the Mediterranean coast, with land frontiers joining France at every point. It is noted for an exceptionally mild climate and magnificent scenery. It is the smallest and densest State in the world. It is divided into 3 communes. The King rules through a legislative (National Council) of 18 members elected for 5 years. *Area* : 58 sq. m. *Population*—30,000. Capital—*Monaco.*

MONGOLIAN PEOPLE'S REPUBLIC—or Outer Mongolia is a sparsely populated country, north of China, and one of the world's oldest countries, once under Chinese suzerainty. Gobi Desert covers much of the central and southern parts. This former Chinese province first declared its indepednence on March 13, 1921, but monarchy of Bagdo Gegen Khan persisted in limited form until the Khan's death in 1924, when the Government proclaimed the country as the Mongolian People's Republic. China claimed a measure of suzerainty over it until it severed all ties by a plebiscite on October 20, 1975, a treaty with National China on Jan. 5, 1946, and subsequent Sino-Soviet agreements. Part of North-West Mongolia was incorporated in the USSR as an autonomous province. According to the Constitution of 1940, since amended, legislative power is vested in the Parliament (*Great People's Khural*) with members elected for a 3-year term by universal suffrage. *Area* : 604,247 sq. m. *Population*—1,400,000. Capital—*Ulan Bator.*

MOROCCO—one of the Barbary States on the north-western top of Africa. The Empire theoretically was an absolute monarchy, but the country was divided into three zones—the *French*, the *Spanish* and the *International Tangier Zone*. The country in effect was partitioned and subjected to foreign rule from 1912 to 1956. As a result of a Protectorate Treaty with France in 1912 and a Convention between France and Spain in 1912, the country was divided into French and Spanish 'spheres of influence' known respectively as *French Morocco* and *Spanish Morocco*. In 1923, the city of Tangier with a small enclave in Spanish Morocco was neutralized and demilitarised. After a lengthy period of unrest, French Government was forced in 1956, to recognise Morocco an independent sovereign State, and Spanish Government agreed in 1956 that Spanish Morocco was an integral part of the Morocco State. In May 1956, the Tangier International Control Committee agreed to the integration of Tangier with the rest of Morocco. Under a Constitution approved by referendum on Dec. 7, 1962, it became a constitutional monarchy. The Constitution came into force on Dec. 12, 1962, and provides for a bicameral elected legislature (Parliament) with limited legislative powers. The lower house (Chamber of Representatives) consists of 144 members. Morocco is primarily agricultural and pastoral. Cereals rank first among agricultural products, including barley, wheat and corn. It is primarily an aricultural country. Fruits and grape abound. *Area* : 171,953 sq. m. *Population*—16,880,000. Capital—*Rabat.*

MOZAMBIQUE—The first Portuguese port on the Mozambique coast was established in 1505. It became independent on June 25, 1975. Agriculture dominates the economy. Coal is the leading mineral. *Area* : 303,373 sq. m. *Population*—9,030,000. Capital—*Lourenco Marques.*

NAURU—a tiny island in the Pacific, 1,500 miles north-east of Australia. It was annexed by Germany in 1888 then mandated by the League of Nations to Great Britain and was placed under UN Trusteeship on Oct. 22, 1947. It was being administered jointly by Great Britain, Australia and New Zealand. It became a republic on Jan. 31, 1968 when the 20-year old UN Trusteeship agreement was terminated. The island has valuable phosphate deposits. *Area* : 8 sq. m. *Population*—6,817. Capital—*Vaboe District.*

NEPAL—a constitutional monarchy on the southern slopes of the Himalayas, bounded on the north by Tibet, south and west by Bihar and U.P., and east by Sikkim and West Bengal. It stretches over 500 miles between India and Tibet. Physically, it consists of two distinct territories : the *Terai* or strip of land cultivated lying along the southern border and the great mountainous tract stretching northwards to Tibet. Nepal has three great distinctions of containing *Mount Everest* (29,028 ft.), the highest mountain peak in the world, producing some of the toughest fighting men in the world—*Gorkhas*, and being the only Hindu independent State in the world.

From the middle of the 19th century, Nepal was ruled by the *Ranas* or hereditary prime ministers of the country. But a revolution in 1950-51 overthrew Rana autocracy and restored the long-lost monarchy. A Constitution promulgated by the King on February 12, 1959, provided for a constitutional monarchy with a Cabinet, a lower house of Parliament of 125 and an upper house of 36, 18 elected by the lower house and 18 by the King. But the Constitution did not work well and has been replaced by a new one based on *Panchayat* system, introduced on April 14, 1963, following a state of emergency in the country and the dismissal of the then cabinet by the King.

Nepal is self-sufficient so far as food is concerned. It claims itself to be the world's best rice-producer. Some of the surplus agricultural products, such as rice, jute, wheat, oilseeds, as well as timber, hides, drugs, etc. are exported. Nepal has rich forest and quartz deposits. Minerals found are gold, silver, copper, lead and iron ores ; but the mining of these underground reserves is undeveloped. *Area* : 54,362 sq. m. *Population*—12,320,000. Capital—*Kathmandu*.

NETHERLANDS—a maritime country in north-western Europe. The Government is constitutional and hereditary monarchy. Executive power is vested exclusively in the Crown, while the legislative powers rest with the Crown and the two-chambered Parliament.

The Netherlands rank high among the world's ship-building nations. Dairy farming is an important industry. Main aricultural products are cereals, potatoes, sugar beets and other crops. The most important industries are shipbuilding, the manufacture of machinery, textiles (including rayon), and chemical products. Amsterdam is famous for diamond cutting. Coal, oil and salt are also found. *Area* : 14,192 sq. m. *Population*—13,597,616. Capital—*Amsterdam*.

NEW ZEALAND—a self-governing member of the Commonwealth in the South-West Pacific. It consists of North Island and South Island, Stewart Island. Chatham Islands and some small uninhabited Pacific islands. The Islands were visited and chartered, in 1769, by Captain Cook. From 1800 onwards sealears and whalers settled along the coasts. Christianity was introduced in 1814, and in 1832 a British Resident was appointed. On Sep. 26, 1907 the designation was changed to the *Dominion of New Zealand*. The Constitution rests upon the Imperial Act of

1852. The executive authority is vested in the Governor-General appointed by the Crown and aided by an Executive Council from an one-chambered legislature, the House of Representatives of 80 members. Important products are wool, meat and dairy. Food processing is the largest industry. *Area* : 103,736 sq. m. *Population*—3,106,000. Capital—*Wellington.*

NICARAGUA—is the largest of the Central American States and lies between the Caribbean Sea and the Pacific Ocean. It is an independent republic since 1838. The Constitution provides for a Congress of 2 chambers, a Chamber of Deputies of 45 members and a Senate of 18 members, each elected for 4 years. The President is elceted for 5 years by direct suffrage. More than half of the country is jungle-covered and sparsely populated. Gold and silver are the most important minerals found. *Area* : 57,143 sq. m. *Population*—2,080,000. Capital—*Managua.*

NIGER, REPUBLIC OF—a former French Overseas Territory in West Central Africa. The first French expedition arrived there in 1891 and the country was fully occupied by 1914. It decided on Dec. 18, 1958, to remain an autonomous republic outside the French Community; full independence outside the French Community was proclaimed on Aug. 3, 1960. Special agreements with France were signed in Paris on April 24, 1961. The Constitution provides for a presidential system of government and a single-chambered National Assembly of 60 members. Peanuts are the principal cash crop ; livestock are second in importance. Cotton is being promoted. *Area* : 489,206 sq. m. *Population*—4,480,000. Capital—*Niamey.*

NIGERIA, THE FEDERATION OF—is situated on the West coast of Africa. Eastern and Western Nigeria became self-governing in 1957 and Northern Nigeria in 1959. The Mid-Western Region was set up in 1963. The Federation of Nigeria became fully independent on Oct. 1, 1960, continuing as a member of the Commonwealth and a republic on Oct. 1, 1963. The Constitution provides for a Federal Parliament consisting of the President, a House of Representatives of 312, directly elected, and a senate, indirectly elected. Each Region has an Executive Council presided over a Premier, House of Assembly, and a House of Chiefs. The Governor of each Region acts on the advice of the Executive Council. On 15th January, 1966, the Federal Government of Nigeria was overthrown in an army *coup* and a military rule under Maj-Gen. A. Ironsi was established there. Maj-Gen. Ironsi was killed in a further *coup* in Aug. 1966. The Eastern Nigeria seceded from the Federation to become Independent Republic of Biafra on May 30, 1967. The Federal Government declared the act of secession as rebellion and enforced blocade. Nigeria's rich natural resources include oil, coal, iron, limestone and natural gas. Cocoa is the main crop. *Area* : 356,669 sq. m. *Population*—79,758,969. Capital—*Lagos.*

NORWAY—a kingdom of North-West Europe, occupying the western part of the Scandinavian Peninsula. Norway is a constitutional and hereditary monarchy. Legislative power is vested in the *Storting* (Parliament) with 150 members. They choose one-quarter of their number to form the *Lagting* (Upper House), the other three-quarters forming the *Orelsting* (Lower Chamber). Executive power is vested in the King acting through the Cabinet or Council of State (*Statsrand*) comprising the Prime Minister and 14 Ministers. In the North Cape area is the phenomenon known as *Midnight* The Sun does not set from the middle of May until the end of July nor does it rise above the horizon approximately from Nov. 18 to Jan. 23. Varicoloured Northern Lights or *Aurora Borealis* are visible in winter.

Almost 74% of the land is unproductive. Forests over 23% of the area and the principal source of wealth. Paper and wood-pulp industries flourish. Fishing is the major occupation of the people, and mining is an important industry. Norway is one of the greatest seafaring nations, and its merchant marine is now the third largest in the world. *Area* : 125,181 sq. m. *Population*—4,000,000. Capital—*Oslo*.

OMAN—an Arab Sheikhdom which was under British protectorate since the early 19th century. Oman emerged into independence in 1971. The chief exports of Oman are dates, fruits, vegetables and fish products. *Area* : 82,000 sq. m. *Population*—750,000. Capital—*Muscat*.

PAKISTAN—Pakistan on the Arabian Sea in the Indian sub-continent's northwest, is surrounded by Iran, Afghanistan, China and India. Poor in industry and natural resources, Pakistan is mainly an agricultural nation. *Area* : 342,750 sq. m. *Population*—68,210,000. Capital—*Islamabad*.

PANAMA—a republic occupying the entire isthmus of the same name, connecting Central and South America and separating the Atlantic from the Pacific Ocean. The coast of Panama was sighted by Rodrigo de Bastidas, sailing with Columbus for Spain in 1501. Freed from Spain, Panama joined Columbia in 1821. Panama declared its independence from Columbia on Nov. 3, 1903, with U.S. recognition. Panama Canal is the country's big economic asset. On Nov. 18, 1903, Panama granted the Canal Zone to the U.S. by treaty. Panama Canal Zone is governed by the Canal Zone Government and operated by the Panama Canal Company, both set up on July 1, 1951. The Secretary of U.S. Army holds all the share of the Company. Panama adopted its 4th constitution in 1972, providing for a President, Legislative Council and an elected Assembly.

Panama has extensive forests. Bananas are the main item of export. *Area*: 28,753 sq. m. *Population*—1,630,000. Capital—*Panama*.

PAPUA NEW GUINEA—occupies the eastern half of the island of New Guinea. It became independent on Sept. 16, 1975. Commercial crops include coconut, cocoa, coffee and rubber. *Area* : 178,260 sq. m. *Population*—2,600,000. Capital—*Port Moresby*.

PARAGUAY—a South American republic, situated between Argentina, Bolivia and Brazil. The Constitution of 1967 provides for a two-chambered Parliament consisting of a 30-seat Senate and a 60-seat Chamber of Deputies. The President is elected for 5 years. He appoints the Cabinet and has wide emergency powers.

Timber resources of Paraguay are enormous. Stock-raising forestry and agriculture are the most important sources of production. Cattle breeding is the principal industry. Main items of export are beef, cotton, hides, tobacco, timber etc. *Area* : 157,047 sq. m. *Population*—2,570,000. Capital—*Asuncion.*

PERU—a maritime republic on the Pacific coast of South America. The country is traversed throughout its length by the Andes. Under the 1933 Constitution, the President is elected for 6 years by direct popular vote. Legislative power is vested in a Senate and a Chamber of Deputies, each house being elected for 6 years. The executive power of the President is exercised through a Cabinet of 12 ministers, responsible to the Congress.

Peru has vast mineral resources. It ranks fifth in the world in silver production and mines about 25 p.c. of the world's vanadium. The leading agricultural produce is cotton. Peru is world's top fishing country. Fish-meal is the biggest item of export. *Area* : 496,222 sq. m. *Population*—15,380,000. Capital—*Lima.*

PHILIPPINES —is the largest island group in the Malaya Archipelago. It consists of 7,090 islands, lying about 500 miles off the south-east coast of Asia. The largest islands are Luzon, Mindanao, Samar, Negras and Palawan. The independence of the Philippines was proclaimed on July 4, 1946 in accordance with the Act passed in the U.S. Congress in 1934. The Philippines have a republican form of Government, based on that of the United States. Executive power is exercised by the president, popularly elected for a 4-year term and assisted by a Cabinet appointed by him. The popularly-elected Congress has two houses—the Senate with 27 members, elected at large for a 6-year term and the House of Representatives with not more than 120 members, elected for a 4-year term.

Forests cover nearly 60 p.c. of the islands and are the source of excellent timber, bamboo, gums, resins, bee-wax and medicinal plants. The chief agricultural products are unhusked rice, manila hemp, sugar-cane, corn and tobacco. The principal export fruit is pineapple. The islands are rich in mineral resources. Most important are gold, silver, iron ore, copper ore, chromite, manganese ore, lead and zinc. *Area* : 115,707 sq. m. *Population*—41,500,000. Capital—*Quezon City.*

POLAND—a communist republic of Central Europe, known as Polish People's Republic. The Constitution of 1952 describes Poland as a people's republic in which the highest authority is the *Sejm* (Parliament) of 425 members, elected for a 4-year term. The *Sejm* elects a Council of State and a Council of Ministers (Cabinet). In most respects it follows the pattern set by the U.S.S.R. Constitution of 1936. The Council of State is the highest organ of the Government.

Poland possesses great mineral wealth. It is one of the world's leading coal producers. Iron, zinc and lead ores, copper, sulphur, clay, granite and chalk are the other mineral deposits. Poland is essentially an agricultural country. *Area* : 120,359 sq. m. *Population*—33,690,000. Capital—*Warsaw*.

PORTUGAL—is a republic of S.W. Europe, occupying the western part of the Iberian Peninsula. Under the 1933 Constitution, revised in 1951, Portugal is a Unitary Corporate Republic. Two assemblies of 120 members each were chosen—the first, the National Assembly, to exercise legislative powers, by direct election by heads of families, regardless of sex, for 4 years ; the second, the Corporative Chamber, chosen through a system of guild or syndical representation. It deals with economic and social matters and advises the National Assembly. The Assembly may override a presidential veto by a two-thirds vote. The President is elected by an elected college composed of members of the Assembly and the Chamber and representatives from various districts for a 7-year term. The Premier is appointed by the President ; neither the Premier nor his Cabinet is responsible to the National Assembly. From 1932, a strong, repressive government was headed by Premier Salazar. Illness forced his retirement in Sept. 1968. Rebel troops overthrew the Rightist authoritarian regime in April 25, 1974. The new government dedicated itself to establishing democracy in Portugal. Portugal leads in the world in the production of cork. *Area* : 35,340 sq. m. *Population*—8,740,000. Capital—*Lisbon*.

QATAR—an Arab Sheikhdom. Since 1916 it was under British protection. As Britain announced withdrawal from the Gulf area, to be completed by the end of 1971, the Persian Gulf state of Qatar declared herself independent on Sept. 1 of that year. *Area* : 4,000 sq. m. *Population*—90,000. Capital—*Doha*.

RHODESIA—is bordered by the Zambezi River and Zambia to the north,, Mozambique to the east, the Republic of South Africa to the south and Botswana to the west. Britain took the area as Southern Rhodesia in 1923 from the British South Africa Co. and granted internal self-government. Under a 1961 constitution, there was a Governor representing the British Crown, a Prime Minister and Legislative Assembly with voting restricted to maintain Whites in power. On Nov. 11, 1965 Prime Minister Ian D. Smith announced his country's unilateral declaration of independence, Britain termed the act illegal. The British Government imposed sanctions, including embargoes in oil shipment to Rhodesia, which were backed by most nations. In May 1968, the U.N. Security Coouncil ordered a complete trade and travel blockade against Rhodesia. In 1969, Rhodesia declared herself a republic. Rich farmlands and mineral deposits are the mainstays of the economy. *Area* : 150,333 sq. m. *Population*—6,100,000. Capital—*Salisbury*.

ROMANIA—is a communist republic of S.-E. Europe. On Dec. 30, 1947 King Micheal I was forced to abdicate, and the Romanian People's Republic was proclaimed. People's Democratic Front won majority in the Grand National Assembly. A new Constitution was passed and the Presidium and the Council of Ministers appointed. Thereafter progress towards socialism was hastened by the Nationalization Law of 1948 which brought under State control, all industrial enterprises. A new Constitution, modelled on the Soviet Constitution of 1936, was adopted on Sept. 24, 1952. A modification in March 1961, replaced the Presidium with the State Council, elected by the Assembly from its own membership. The Assembly is the supreme organ of State power. Its 465 members (Deputies) are elected for a 4-year term.

Romania is a highly industrialised country and has considerable mineral wealth. Petroleum is the backbone of the country's economy. Grape, wines and fruits abound. *Area* : 91,699 sq. m. *Population*—21,030,000. Capital—*Bucharest.*

RWANDA—a small State in North Central Africa, was a part of the former Belgian-U.N. Trusteeship of Ruanda-Urundi. Monarchy was abolished by popular vote on October 12, 1961, and the country became a republic on July 1, 1962. It is the most densely populated country in Africa. *Area* : 10,169 sq. m. *Population*—4,120,000. Capital—*Kigali.*

SAN MARINO—This smallest republic in the world is bounded by Italian territory. It claims to be the oldest State in Europe being founded in the 4th century. San Marino, the capital, is situated on a spur of the Apennines. It is governed by a Grand Council of 60 members elected by popular vote for a 5-year term. Two of the members are chosen to exercise executive powers for a term of 6 months. *Area* : 23.5 sq. m. *Population*—19,502. Capital—*San Marino.*

SAO TOME AND PRINCIPE—Formerly a Portuguese colony, it became independent on July 12, 1975. It lies in the Gulf of Guinea about 125 miles off West Central Africa. Cocoa is the principal product. *Area* : 372 sq. m. *Population*—80,000. Capital—*Sao Tome.*

SAUDI-ARABIA—is the most important State of the peninsula, occupying nearly four-fifths of its total area. It consists of Nejd, Hejaz and its two dependencies. Saudi-Arabia is a nearly absolute monarchy. A Council of Ministers headed by the Prime Minister rules the country. The country contains the holy places of Islam—*Medina* where lies the tomb of Mohammed and *Mecca*, the birthplace of the Prophet, which contains a great *mosque*. Saudi-Arabia possesses one of the great oil reserves of the world. *Area* : 873,000 sq. m. *Population*—8,100,000. Capital—*Riyadh.*

SENEGAL—a republic on the west coast of Africa. In 1946, Senegal became a part of the French Union together with other parts of French West Africa. On Nov. 25, 1958, it elected to remain within the French Community as a autonomous republic. On June 20, it federated with the Sudanese Republic in the Mali Federation, from which it withdrew on August 22 in the same year following a political conflict. A new Constitution, approved in March 1963, gave executive powers to the President. *Area* : 76,124 sq. m. *Population*—4,320,000. Capital —*Dakar*.

SEYCHELLES—The Seychelles are a group of 86 islands and islets in the Indian Ocean, 700 miles north of Madagascar. The islands were occupied by France in 1768 and seized by Britain in 1794. It became independent on June 28, 1976. Most of the population is engaged in agriculture and fishing. *Area* : 107 sq. m. *Population*—60,000. Capital —*Victoria*.

SIERRA LEONE—a peninsula on the west coast of Africa. A former British colony and protectorate. Sierra Leone became fully independent and a member of the Commonwealth on April 27, 1961. For administrative purposes, the country is divided into 3 provinces covering 12 districts. Under the 1961 Constitution, the Governor-General representing the Crown is appointed on the advice of the Prime Minister. The House of Representatives consists of not less than 60 members. The Cabinet consists of the Prime Minister and not less than 7 other Ministers appointed by the Governor-General on the recommendation of the Prime Minister. On March 21, 1967 the military took over the Government, dissolved the Parliament and suspended the Constitution. They subsequently formed the National Reformation Council, headed by a Chairman, Principal exports are industrial diamonds, iron ore, bauxite, cocoa, coffee, palm kernels, kola nuts, ginger, hiassava. *Area* : 27,925 sq. m. *Population*—2,710,000. Capital—*Freetown*.

SINGAPORE—a former British island colony, it lies in the narrowest part of the Strait of Malacca. The island is only 42 km. long and 22.5 km. wide. Nearly 75 p.c. of the total population is of Chinese origin. It is a major commercial centre and an important international air communications hub. Trade is the mainstay of the country's economy. The port handles 40 p.c. of the world's trade in tin and rubber. Industry plays a relatively small part. The island is the site of massive British naval and air bases and the headquarters of the British Far East Command.

The island became a British colony early in the 19th century, by the end of which it was turned into a base for suppressing popular rising in or around Malaya. Along with the other British possessions in the Pacific it was captured by the Japanese during the Second World War ; but was liberated at the surrender of Japan. In 1946, Singapore was given the status of a separate British colony. On June 3, 1959, it was proclaimed an autonomous and self-governing State ; with British retaining control over the island's foreign policy and defence. On Sept. 16, 1963, it federated with Malaya and other State to form Federation of Malaysia. It seceded from the Federation by an agreement on Aug.

for late 1975. *Area* : 63,251 sq. m. *Population*—410,000. Capital—*Paramaribo*.

SWAZILAND—a kingdom in Africa. After 300 years of British rule it achieved independence on Sept. 6, 1968. In 1966, a new Constitution was promulgated and Swaziland was given internal self-government. Under the new Constitution, the Parliament consists of the King, a cabinet headed by the Prime Minister, the Senate and the Legislative Assembly. The Legislative Assembly consists of 24 elected members, 6 members nominatd by the King and the Attorney-General.

Swaziland is abundant in natural resources. Reserves of iron ore and asbestos are extensive. Among the agricultural products, cotton, tobacco, oranges, sugar and rice are exported. *Area* : 6,705 sq. m. *Population*—480,000. Capital—*Mbabane*.

SWEDEN—a kingdom in North Europe, occupying the largest portion of the Scandinavian Peninsula. The Government is a constitutional hereditary monarchy. The King holds executive and judicial authority together with the Council of States headed by the Prime Minister. The Council is appointed by the King, but is responsible collectively to the *Riksdag* (Parliament), which has an upper chamber of 151, elected indirectly for 8 years and a lower chamber of 233, elected directly by popular vote for 4 years.

Sweden has an important source of high-grade iron ore. It is one of the leading exporters of iron ore and cellulose. It also exports lumber, pulp, paper and other forestry products, and is known for its special technical industries (ball bearings and electrical appliances). Chief agricultural products are cheeses, butter, beef, pork, wheat, rye, potatoes, sugar beets and vegetable oils. *Area* : 173,665 sq. m. *Population*—8,176,691. Capital—*Stockholm*.

SWITZERLAND—a federal republic in Central Europe surrounded by France, Germany, Austria and Italy. It is a confederation of 22 cantons. Each has its own legislative, executive and judiciary departments with the right to veto over federal legislation through referendum. The legislative authority vests in a Parliament of two chambers : a *Standerat* (Council of State) of 44 members and a *Nationalrat* (National Council) of 200 members. The executive power is vested in the *Bundesrat* of 7 members. The President is selected from membership of the Federal Council, serves for one year, and customarily, is succeeded by the Vice-President. On the basis of international treaties and guarantees, Switzerland is perpetually neutral. Switzerland enters into no military alliance and is not a member of the U.N. or NATO. It is, however, a member of various international organisations of the U.N., e.g., *W.H.O.*, *I.L.O.*, *F.A.O.*, *U.N.E.S.C.O.*, etc. German, French and Italian are the three official languages of Switzerland.

Dairying, stock-raising, watch-making and precision instrument manufacturing are the principal industries ; but the biggest business in

Switzerland is the tourist industry. *Area* : 15,941 sq. m. *Population*—6,480,000. Capital—*Berne.*

SYRIA—a republic in the Levant, covering a portion of the former Ottoman Empire. It is an arid and uncultivated country situated in a fertile oasis. It had been under French mandate since World War I, and became an independent republic during World War II. The partly U.S.-type Constitution was passed in 1950. It joined Egypt on Feb. 1, 1958 to form *United Arab Republic.* Syria seceded from U.A.R. on September 28, 1961 as a result of a *coup d'etat.* Following another *coup* on March 8, 1963, Syria was governed by a Ministerial Cabinet directly responsible to the National Council of the Revolutionary Command. On Feb. 23, 1966, the Government was again overthrown by another *coup d'etat.*

Chief exports are cotton, barley, wheat, fruits, vegetable, meat, textiles and wool. Main industries are flour milling, oil refining, textiles, cement, tobacco, glassware, sugar and brassware. *Area* : 71,498 sq. m. *Population*—7,120,000. Capital—*Damascus.*

TANZANIA—*Tanganyika*, the mainland part of the United Republic of Tanzania (Tanganyika and Zanzibar), occupies the east-central portion of the African continent. It has coastline of about 500 miles and an area of 362,688 sq. miles. Formerly ruled by the Sultan of Zanzibar, and a British Protectorate until Dec. 10, 1963, *Zanzibar* consists of the islands of Zanzibar and Pemba, Lamu, Manda, Patta, and Siu. It has a total area of 1,020 sq. m. Zanzibar became internally self-governing on June 24, 1963, and fully independent on Dec. 10, 1963. A revolutionary party seized power on Jan. 12, 1964, and the Sultan was forced to leave the country. Following a constitutional conference held in Dar-es-Salaam in March 1961, Tanganyika became an independent State and a member of the Commonwealth on Dec. 9, 1961. It became a republic on Dec. 10, 1962. On April 25, 1964, following a parliamentary ratification of an agreement signed by the President of the Republic of Tanganyika and the President of the People's Republic of Zanzibar and Pemba, Tanganyika united with Zanzibar to form a new sovereign State. Zanzibar has a separate legislature which legislates for matter which are not under the Union Government. The chief commercial crops are clove, clove oil, tea, tobacco, sisal, cotton, coffee and oilseeds. The most important minerals are diamonds, gold, tin, lead and mica. Hides and skins are other valuable items of export. *Area* : 363,708 sq. m. *Population*—14,760,000. Capital—*Dar-es-Salaam.*

THAILAND—a sovereign independent State in S.E. Asia between Burma on the west and Laos and Cambodia on the east.

Agriculture occupies more than 91 p.c. of the population. The chief corn and the principal earner of foreign exchange is rice. Other important products are rubber and timber. Tin ore is the important mineral in the country. *Area* : 198,455 sq. m. *Population*—41,020,000. Capital—*Bangkok*.

TOGO—a republic occupying a narrow strip of territory running north from a short coastline one of Gulf of Guinea and lying between Ghana on the west and Benin on the east. Formerly a part of the German colony of Togoland, surrendered in 1914, it was administered by France as a U.N. trusteeship territory between 1946-60. On November 14, 1958, the U.N. voted for the establishment of an independent State. Accordingly, the Republic of Togo was set up on April 27, 1960. The U.S.-modelled Constitution, adopted on March 20, 1961, provided for a President and a 46-member unicameral Parliament, the National Assembly ; but it was suspended following a *coup* on Jan. 13, 1963. A new Constitution came into force and a fresh Assembly elected on May 5 that year. All civil, political and military powers in Togo were taken over on Jan. 13, 1967 in *coup d'grace* by the Army led by Lt.-Col. E. Eyadema. *Area* : 21,853 sq. m. *Population*—2,170,000. Capital—*Lome*.

TONGA, KINGDOM OF—this kingdom consists of some 150 islands and islets known as the Friendly Islands. Formerly it was under British supremacy and became independent in June 1970. The Government consists of a king, a Prime Minister and a partly elected Legislature Assembly. Tonga was united by Taufa'ahau Tupou in 1845. By the Anglo-German agreement of 1899 the Tonga islands were left under the Protectorate of British. A British Agent and Council was appointed in 1900. The population is mainly of polynnesian stock but darker and perhaps related to the Maoris of Australia. *Area* : 269 sq. m. *Population*—100,000. Capital—*Nukualofa*.

TRINIDAD & TOBAGO—These two islands belonging to West Indies group gained independence from British rule on Aug. 31, 1962 and became 15th Commonwealth Nation. The Parliament consists of a Senate of 24 members nominated by the Governor-General, and a House of Representatives. *Trinidad* is only 7 miles away from the coast of Venezuela on the Atlantic. It was discovered by Columbus in 1498, was colonized in 1532 by the Spaniards and was ceded to Britain on March 25, 1802. *Tobago* lies about 19 miles north-east of Trinidad. It was ceded to the British Crown in 1814 and amalgamated with Trinidad in 1888. Oil is the principal export from these islands. *Area* : 1,979 sq. m. *Population*—1,060,000. Capital—*Port of Spain*.

TUNISIA—lies on the Mediterranean coast of Africa between Algeria and Libya and extends southwards to the Sahara. Formerly a French protectorate, Tunisia became independent on March 20, 1956. On July 25, 1957 the Constituent Assembly voted to abolish the monarchy and proclaimed a republic. On June 1, 1959, a new Constitution wsa adopted. Vine and olive, are extensively cultivated. The chief exports are cereals, olive oil, phosphates, iron ore, wines. *Area* : 63,378 sq. m. *Population*—5,564,000. Capital—*Tunis*.

TURKEY—a republic of Asia and Europe since 1928. The European territory was reduced to the city of Constantinople and a narrow strip of country around it. It is 9,254 sq. miles in area and is separated from Asia by the Bosphorous and Dardanelles. The Turkey in Asia has 285,246 sq. miles of area and 90 p.c. of the population. The Turkish State is defined as 'republican, nationalist, popular, *etatist*, secular and revolutionary.' The President is chosen from the Deputies of the National Assembly, his term of office being identical with the life of each Assembly. The Democratic Party was ruling the country so long, but on May 4, 1960, this Party was overthrown by the Turkish Armed Forces, which ruled through the Committee of National Union up to July 9, 1961, when under a revised Constitution, a civilian parliamentary government was established. The new Constitution provides for a bicameral legislature, National Assembly, composed of a Senate of 172 Senators and an Assembly of 450 Deputies. The President is elected by Parliament for a 7-year term.

About 80 p.c. of the population depends on agriculture. The country has considerable yet unexploited mineral wealth. It is the largest producer of chrome in the world. *Area*: 301,380 sq. m. *Population*—36,270,000. Capital—*Ankara*.

UGANDA—lies in East Central Africa to the West of Kenya with Sudan and the north and Republic of Congo on the west. Formerly a British protectorate. Uganda became an independent State within the Commonwealth on October 9, 1962 and republic on October 9, 1963. The country is comprised of 4 provinces. National Assembly consists of the Speaker and 92 members. On Feb. 22, 1966, Dr. Milton Obote. the Prime Minister assumed full powers of the Government, and on Feb 24, announced the suspension of the Constitution. On March 10, he announced the abolition of the posts of the President and Vice-President, and on April 15 declared himself President under a new Constitution. He was ousted in a *coup d'etat* on Jan. 25, 1971, and Gen. Idi Amin seized control and became president of the country. Uganda is the largest coffee producer in the Commonwealth. *Area*: 91,134 sq. m. *Population*—11,170,000. Capital—*Kampala*.

UNION OF SOVIET SOCIALIST REPUBLICS (U.S.S.R.)—a federal State in East Europe and in North and Wset Central Asia. The U.S.S.R. emerged as a political entity under the leadership of Lenin after the Russian Revolution of 1917 and the downfall of the empire in Russia. It was proclaimed formally in 1922, after a confused interim period of civil war with Poland (1920), the first State basing its Constitution on Marxist communism.

The Union of Soviet Socialist Republic is composed of 15 Republics—Russia, Ukrainian, Bylorussian, Azerbaidjan, Georgian, Armenian, Kazak, Turkmenian, Kirghiz, Tadiek, Uzbek, Estonian, Latvian, Lithuanian and Moldavian Soviet Socialist Republics. It is the largest country in the world, stretching across two continents (Europe and Asia) from the North Pacific to the Gulf and Finland. Vast territory of U.S.S.R., one-sixth of the earth's land surface, contains every phase of climate except the distinctly tropical, and a varied topography.

The Constitution, adopted on December 5, 1936, provides that the highest organ in the U.S.S.R. is the Supreme Soviet consisting of two equal Houses ; that members thereof shall be chosen on the basis of universal, equal and direct suffrage by secret ballot for a term of 4 years ; that regular sessions of each body shall be held twice each year ; that there shall be a President of each House ; that there shall be a Presidium of the Supreme Soviet, which shall consist of a President 15 Vice-Presidents (one Vice-President for each constituent republic of the Union), a secretary and 16 members ; that the Presidium shall act as an executive and directive body between the session of the Supreme Soviet. The highest judicial organ is the Supreme Court, whose members are elected by the Supreme Soviet for a 5-year term. The highest executive and administrative organ of State power is the Council of Ministers appointed by and theoretically responsible to the Supreme Soviet.

The U.S.S.R. is probably the richest country in the world in mineral resources, containing deposits of almost every known mineral. It ranks among the top producing nations in oil, chromite, iron ore, petroleum, gold, copper, manganese, aluminium, platinum, asbestos, salt and other products. The richest mineral region is that of the Ural mountains. Forests are a considerable source of wealth. *Area* : 8,647,250. sq. m. *Population*—250,900,000. Capital—*Moscow.*

UNITED ARAB EMIRATES—formerly known as the Trucial States or Trucial Sheikdoms, were British Protected States until they became an independent nation on Dec. 2, 1971. *Area* : 32,278 sq. m. *Population*—220,000. Capital—*Abu Dhabi.*

UNITED KINGDOM—See Great Britain.

UNITED STATES OF AMERICA—a federal republic of North America, extending from the Atlantic to the Pacific and from Canada to Mexico, with outlying areas in Alaska, Puerto Rico, Hawaii, Guam and other Pacific islands. The U.S.A. consists of 50 States and the Federal District of Columbia. It has a Federal Government which is based on the separation of powers—the President, the House of Congress and the Supreme Court, being resigned to balance and restrain each other—hence the famous concept of "checks and balances". Each State is self-governing in local matters, but confides to the Federal Government the control of foreign affairs and the army and navy. Police, education, public health, etc., remain within the scope of the individual States. The capital is Washington which belongs to no State and is administered directly by the Federal Government. Executive power is vested in the President elected by popular vote every 4 years and is eligible for re-election to one additional term. He chooses the members of the Cabinet, who are not (as in England) members of the legislature. Legislative power is vested in the Congress, composed of two houses ;

the Senate with 2 members from each State, elected to serve for 6 years and the House of Representatives composed of a number of members varying according to the census, elected for 2 years. There is adult suffrage. The third main component of the Constitution is the Supreme Court at Washington. *Area* : 3,026,789 sq. m. *Population*—204,765,770. Capital—*Washington.*

UPPER VOLTA—an island State in West Africa between Niger and Benin on the east, Togo, Ghana and Ivory Coast on the south and Mali on the west. Upper Volta was annexed by France in 1896. It decided on Dec. 11, 1958 to remain an autonomous republic within the French Community. Full independence was proclaimed on Aug. 5, 1960. It elected to remain outside the French Community but maintains close ties with France. The Constitution, adopted on Nov. 27, 1960, provides for a presidential form of government and a unicameral National Assembly. More than 90% of the people are subsistence farmers. Greatest wealth is in livestock, mostly cattle and ship. *Area* : 105,869 sq. m. *Population*—5,900,000. Capital—*Ouagadougou.*

URUGUAY—the smallest and one of the most advanced republic in South America on the South Atlantic coast. The Constitution of 1952 (March 1) provides for a Chamber of Deputies and a Senate elected for a 4-year term. There is a 9-man coalition Executive Council elected for 4 years, its leadership rotating annually among the 6 majority members. The Council chooses 9 departmental ministers. Chief products are meat, wool, hides, corn, wheat, citrus fruits, rice, oats and linseed. *Area* : 72,172 sq. m. *Population*—2,886,000. Capital—*Montevideo.*

VATICAN CITY—an independent sovereign State created by the Treaty of 1929, of which the Pope is the head. It lies in the heart of Rome and includes Vatican Palace, the Pope's official residence and the basilica and square of St. Peter's. The immediate Government of the State of Vatican City is in the hands of a Governor. He is assisted by a Counsellor-General and by a number of offices. There is no political party and no Parliament. *Area* : 108.7 acres. *Population*—over 1,000.

VENEZUELA—is the northernmost State of South America on the Carribean Sea coast. The present Constitution of 1961 provides for a strong Central Govt., a President elected for 5 years by direct universal vote, a Senate and a Chamber of Deputies, and a Supreme Court. Mining, agriculture and stock-raising are the chief industries. Venezuela ranks high in the production of petroleum. Coffee is the major agricultural products. *Area* : 352,143 sq. m. *Population*—11,630,000. Capital—*Caracas.*

VIETNAM—Vietnam, one of the three former French Indo-Chinese Associated States, is situated in S.-E. Asia. In 1940 Vietnam was occupied by Japan. During occupation nationalist aims gathered force and Vietnam League was formed headed by Ho Chi Minh. Bao Dai, Emperor of Annam sponsored by Japan was thrown out in August 1945.

The French who were seeking to re-establish colonial control, were finally defeated at Dienbienphu on May 8, 1954. On July 1, 1949 Bao Dai had framed a State of Vietnam, with its capital at Saigon and himself as the chief of the State. On the other hand another State was formed by Ho Chi Minh backed by Communist China. A cesae fire accord was signed in Geneva on July 21, 1954 which divided Vietnam along the Ben Hai River.

According to the Geneva Agreement of 1954 which ended the Indo-China War, North and South Vietnam were reunified through election in 1956. On Oct. 26, 1955, Ngo Dinh Diem became the first President of South Vietnam. Fighting persisted from 1956, with the Communist Viet Cong, aided by North Vietnam and South Vietnam receiving increasing U.S. aid. A serious political conflict arose in 1963 when Buddhist groups charged the Government with authoritarianism and brutality. A military coup overthrew the Diem Government on Nov. 1-2, 1963. The military triumvirate headed by Maj. Gen. Duong Van Minh was overthrown on Jan. 30, 1964 by Maj. Gen. Nguyen Khanh. Other Governments followed: Air Force Commander Nguyen Cao Ky became Premier on June 19, 1965 of the 9th regime since the fall of President Diem. In elections on Sept. 3, 1967, Chief of State Nguyen Van Thieu was chosen President and Premier Ky, Vice-President. A 60-member Senate was also elected on Sept. 3 and 137-member House on Oct. 22. On Aug. 2-4, 1964, attacks were made on U.S. destroyers. U.S. retaliated with heavy air strikes against North Vietnam. Beginning in 1965, the raids were stepped up. On March 31, 1968, U.S. President Johnson announced the unilateral halting of bombing. On Nov. 1, 1968 President Johnson ended air, naval and artillery bombardment of North Vietnam. President Nixon proposed that the U.S. troops should be removed from South Vietnam. From June 1969, U.S. troops had been removed substantially.

President Nguyen Van Thieu resigned on April 21 as NLF forces pushed closer to Saigon. The National Assembly of South Vietnam, on April 27, conferred full powers on former General Duong Van "Big" Minh, naming him President and entrusting him the mission of seeking to negotiate with the PRG of South Vietnam. On April 30, North Vietnam and NLF forces entered Saigon in triumph, two hours after Gen. Duong Van Minh's government had surrendered unconditinoally. That ended a 30-year ordeal for battle-weary South Vietnam. Within hours of collapse of the Saigon regime, India formally recognized the Provisional Revolutionary government of South Vietnam.

One phase of the Vietnam War ended 21 years ago when the French surrendered at Dien Bien Phu. The seeds of another war were sown, when the South Vietnam government with American support refused to hold the 1956 elections for reunification agreed upon at Geneva. The American phase of the war ended with Geneva agreements of 1973. And the third phase ended with the surrender of the Saigon government.

The Vietnamese unified National Assembly was inaugurated in Hanoi on June 24, 1976 marking the formal unification of the country. *Area* : 126,436 sq. m. *Population*—42,650,000. Capital—*Ho Chi Minh* (formerly known as *Saigon*).

WESTERN SAMOA—one of the world's smallest free countries. It comprises 4 inhabited islands of a group in the South Pacific Ocean, lying about 2,600 miles south-west of Hawaii. It was a German colony from 1899-1914 and then a New Zealand Trusteeship under U.N. It became fully independent on Jan. 1, 1962. *Area* : 1,133 sq. m. *Population*—160,000. Capital—*Apia*.

YEMEN, ARAB REPUBLIC OF—occupies the south-west corner of Arabia between Saudi Arabia and Aden protectorate. It became a republic in Sept. 1962. *Area* : 75,289 sq. m. *Population*—6,480,000. Capital—*Saana*.

YEMEN, PEOPLE'S DEMOCRATIC REPUBLIC OF—became independent on Nov. 30, 1967. *Area* : 112,000 sq. m. *Population*—1,630,000. Capital—*Aden* and *Medina as-Shaab*.

YUGOSLAVIA—is a republic of S.-E. Europe in the Balkan Peninsula and is a federation comprising the People's Republic of Serbia, Croatia, Slovenia, Bosnia—Harzegovina, Macedonia and Montenegro. Under the 1953 Constitution, Yugoslavia became a federal republic. It is governed by the President and the federal Executive Council, a committee of Parliament numbering 34 to 36. The bicameral Parliament (*Skupshtina*) consists of the Federal Council and the Council of Producers, with deputies representing the constituent republics and organized economic groups. A new Constitution was approved by Parliament on April 7, 1963, which *empowered Marshal Tito to remain President for life*, made the country's official name the *Socialist Federal Republic of Yugoslavia* and provided that future Presidents be elected by Parliament and restricted to two consecutive 4-year terms.

Yugoslavia became a confederation consisting of 6 sovereign States and 2 autonomous provinces on 30 June, 1971. Thus this became the first country in modernn history to change from a strictly centralised State into a confederation.

The constitutional amendments adopted by Federal Parliament transferred the States and autonomous provinces wide power until then concentrated with the federal authorities. Foreign policies and the army remained in the hands of the Federal Government, but in these matters, like in some other which remained in Federal hands in all major issues, unanimous approval of all States is required.

In the framework of the changes post of President of the Republic is also changing. President Tito's proposal to introduce a collective Presidency to run the country has also been adopted.

Yugoslavia is a predominantly industrial country. The main agricultural crops are wheat and maize. *Area*: 98,766 sq. m. *Population*—21,160,000. Capital—*Belgrade*.

ZAIRE—A former Belgian colony in Equatorial Africa, Congo became independent on June 30, 1960. The new nation was, however, torn by widespread violence and pillage begun by mutinous Congolese soldiers and extremists. Katanga, the largest and richest province, proclaimed on July 11, 1960, secession from the Republic under Premier Moise Tshombe. But it failed to obtain international recognition Katanga did not came under the Government at Leopoldeville until Jan. 14, 1963. In Sept. 1963, Parliament was recalled to sit as a Constituent Assembly but failed to make any progress. Mr. Tshombe who went on exile, returned to Leopoldeville in June, 1964 and formed a Coalition Government of 11 members on July 10. But on Oct. 13, 1965, President Kasavubu dismissed him from premiership and appointed Everette Kimba in his place. Mr. Kimba's Government failed to get a vote of confidence in the Parliament on Nov. 14. On Nov. 25, General Mobutu of the Congolese army deposed President Kasavubu in a bloodless coup, seized power for himself and declared himself the President for next 5 years. On Oct. 26, 1966, he also assumed the office of the Prime Minister.

Much of the land is covered by tropical rain forest. Wild life is abundant. Palm oil is the main agricultural cash product, followed by rubber, cotton, coffee, and timber. The country is rich in minerals and is the world's largest producer of industrial diamonds and cobalt. Other minerals are gold, silver, tin, zinc, iron, copper, tungsten, manganese, uranium, radium, etc. *Area*: 905,063 sq. m. *Population*—24,220,000. Capital—*Kinshasa*.

ZAMBIA—formerly known as Northern Rhodesia, Zambia lies on the plateau of Central Africa. It became an independent republic on Oct. 24, 1964. It is a member of the Commonwealth. The executive power rests with the President, elected by the Legislative Assembly, which consists of 75 elected members and 5 members specially nominated by the President. *Area* : 290,724 sq. m. *Population*—4,750,000. Capital—*Lusaka*.

Indian Information

HILL STATIONS

	Above sea level (ft.)		Above sea level (ft.)
Gulmarg (Kashmir)	8,870	Mussorie (U. P.)	6,580
Dalhousie (H. P.)	7,867	Nainital (U. P.)	6,400
Ootacamund (Tamil Nadu)	7,500	Kasauli (H. P.)	6,200
Simla (H. P.)	7,235	Kulu Valley (H. P.)	5,000
Pahalgam (Kashmir)	7,200	Shillong (Meghalaya)	4,980
Darjeeling (W. Bengal)	7,168	Mahabaleswar (Maharashtra)	4,500
Kodaikanal (Tamil Nadu)	7,000	Mount Abu (Rajasthan)	4,500

NOTABLE BRIDGES

	Feet		Feet
Sone Bridge (Bihar)	10,052	Mahanadi Bridge (Orissa)	6,912
Godavari Bridge (Andhra)	9,096	Izat Bridge (Allahabad)	6,830
Alexandra (Chenab)	9,088	Ganga Bridge (Mokamah)	6,078

MUSEUMS

Salar Jung Museum, Hyderabad.
Archaelogical Museum, Hyderabad.
National Museum, Delhi.
National Art Gallery, Delhi.
Kumar Art Gallery, Delhi.
Delhi Fort Museum, Delhi.
War Memorial Museum, Delhi.
Assam State Museum, Gauhati.
Archaeological Museum, Gwalior.
Central Museum, Jaipur.
Ajmer Museum, Jaipur.
Alwar Museum, Alwar.
Kotah Museum, Kotah.
Bharatpur Museum, Bharatpur.
Jodhpur Museum, Jodhpur.
Victoria Hall Museum, Udaipur.
Ganga Museum, Bikaner.
Pratap Singh Museum, Srinagar.
Municipal Museum, Allahabad.
State Museum, Lucknow.
Bharat Kala Bhavan, Banaras.
Sarnath Museum, Banaras.
Prince of Wales Museum, Bombay.
Victoria & Albert Museum, Bombay.
Baroda Museum, Baroda.
Fateh Singh Museum, Baroda.
Municipal Museum, Ahmedabad.
Junagadh Museum, Junagadh.
Bhavnagar Museum, Bhavnagar.
Jamnagar Museum, Jamnagar.
Watson Museum, Rajkot.
Indore Museum, Indore.
Bhopal Museum, Bhopal.
Sanchi Museum, Sanchi (M.P.).
Central Museum, Nagpur.
Government Museum, Madras.
Government Museum, Bangalore.

INDIAN PARLIAMENT

LOK SABHA : *Speaker*—G. V. Mavlankar, 1952-56.
M. Ananthasayanam Ayyanger 1956-62.
Hukam Singh, 1962-67.
N. Sanjiva Reddi, 1967-69.
G. S. Dhillon, Aug. 1969—30 Nov. 1975.
B. R. Bhagat, Dec. 1975—

RAJYA SABHA : *Chairman*—Dr. S. Radhakrishnan, 1952-62.
Dr. Zakir Husain, 1962-67.
V. V. Giri, 1967—3 May. 1969.
G. S. Pathak, 31st Aug. 1969—31st Aug. 1974.
B. D. Jatti, 31st Aug. 1974—

PRIME MINISTERS OF INDIA

Jawaharlal Nehru, 15 Aug., 1947-27 May, 1964.

Gulzarilal Nanda, 27 May—9 June, 1964 (*Care-taker Govt.*)

Lal Bahadur Shastri, 9 June, 1964—11 January, 1966.

Gulzarilal Nanda, 11 Jan. 1966.—24 Jan., 1966 (*Care-taker Govt.*).

Sm. Indira Gandhi, 24 Jan. 1966—

MILITARY CHIEFS OF INDIA

Army

Gen. Sir R. M. Lockhart, 1948.
Gen. F. R. R. Bucher, 1948.
Gen. K. M. Carriappa, 1949.
Gen. Rajendra Singji, 1953.
Gen. S. M. Srinagesh, 1955.
Gen. K. S. Thimmaya, 1957.
Gen. P. N. Thapar, 1962.
Gen. J. N. Chaudhury, 1962.
Gen. P. P. Kumaramangalam, 1966
Gen. S. H. F. J. Manekshaw, 1969.
Gen. G. G. Bewoor, 1973.
Gen. T. N. Raina, 1975.

Navy

Vice-Admiral Sir E. Perry, 1948.
Vice-Admiral C. T. M. Pizey, 1951.
Vice-Admiral S. H. Carlill, 1955.
Vice-Admiral R. D. Katari, 1958.
Admiral B. S. Soman, 1962.
Admiral A. K. Chatterjee, 1966.
Admiral S. M. Nanda, 1970.
Admiral S. N. Kohli, 1973.

Air Force

Air Marshal R. J. Chapman, 1948.
Air Marshal G. E. Gibbs, 1951.
Air Marshal S. Mukherjee, 1954.
Air Marshal A. M. Engineer, 1960.
Air Chief Marshal Arjan Singh, 1964.
Air Chief Marshal P. C. Lal, 1969.
Air Chief Marshal O. P. Mehra, 1973.
Air Chief Marshal H. Mulgaonkar, 1975.

INDIAN FELLOWS OF THE ROYAL SOCIETY

1841—A. Carsetji.
1918—S. Ramanujam.
1920—Sir J. C. Bose.
1924—C. V. Raman.
1927—Meghnad Saha.
1936—Birbal Sahani.
1940—K. S. Krishnan.
1941—H. J. Bhabha.
1943—S. S. Bhatnagar.
1945—S. Chandrasekhar.
1945—P. C. Mahalanobis.
1957—D. N. Wadia.
1958—S. N. Bose.
1958—S. K. Mitra.
1960—T. R. Seshadri.
1965—P. Maheshwari.
1967—C. R. Rao.
1970—M. G. K. Menon.
1973—M. S. Swaminathan.

INDIANS IN THE BRITISH PARLIAMENT

Dadabhai Naoroji (Liberal).
Sir M. M. Bhowanagree (Conservative).
Sapurji Saklatwala (Communist).
Lord S. P. Sinha (House of Lords).
Lord A. K. Sinha (House of Lords).
Lord Sudhindra Prasanna Sinha (House of Lords).

INDIAN PRIVY COUNCILLORS

1909—Syed Ameer Ali.
Sir B. C. Mitter.
1921—V. S. Srinivasa Sastri.
1926—Lord S. P. Sinha.
1930—Sir D. F. Mulla.
1931—Sir Shadilal.
1934—Sir Tej Bahadur Sapru.
1934—H. H. The Aga Khan.
1936—Sir Akbar Hydari.
1939—Dr. M. R. Jayakar.
1941—Sir C. Madhavan Nair.

INDIAN MEMBER OF THE U. S. CONGRESS

Dilip Singh Saund (Democrat)

INDIAN NOBEL PRIZE WINNERS

1913—Rabindranath Tagore (*Literature*).
1930—Sir C. V. Raman (*Physics*).
1968—Dr. Hargovind Khorana (*Physiology & Medicine*).

INDIA LELIN PEACE PRIZE WINNERS

1952—Dr. Safiuddin Kitchlu.
1953—Major-General S. S. Sokhey.
1958—Sir C. V. Raman.
1960—Mrs. Rameswari Nehru.
1964—Aruna Asaf Ali.
1968—Ramesh Chandra.

NATIONAL DAYS

Army Day—15th January.
Republic Day—26th January.
Martyrs' Day—30th January.
Maritime Day—4th April.
Independence Day—15th Aug.
Teachers' Day—5th September.

Mahatma Gandhi's Birthday—2nd October.

Children's Day—14th Nov.

Territorial Army Day—18th November.

Navy Day—21st December.

FIRST IN INDIA

Largest Lake—Wular (Kashmir).

Highest Peak—Nanda Devi (25,645 feet).

Largest Populated City—Greater Calcutta.

Highest Rainfall—at Cherrapunji (Meghalaya), yearly 420 inches in average.

Largest Delta—Sundarban Delta (8,000 sq. miles).

Longest Bridge—Sone Bridge (10,052 ft. long).

Longest Barrage—Sone (4,616 ft.).

Longest Cantilever Span Bridge—Howrah Bridge (2,150 ft.).

Largest Cave Temple—Ellora (Maharashtra).

Longest Corridor—Rameswaram Temple's Corridor (4,000 ft.).

Largest Mosque—Jumma Masjid, Delhi.

Highest Dam—Bhakra-Nangal Dam, Punjab (740 ft. high).

Longest electric train services—Bombay to Poona.

Highest Gateway—Buland Darwaja, Fatehpur Sikri (176 ft. high).

Tallest Statue—Statue of Gomateswara, Mysore (57 ft. high).

Longest Platform—Kharagpur Platform, S. E. Rly. (2,733 feet).*

Longest Road—Grand Trunk Road (1,500 miles).

Highest Tower—Kutab Minar, Delhi (288 ft. high).

Largest Dome—Gol Gambuz, Bijapur (144 ft. in exterior diameter).

Biggest Zoo—Zoological Gardens, Calcutta (270 acres in area).

Biggest Museum—Indian, Museum Calcutta.

Largest State—Madhya Pradesh (1,71,217 sq. m.).

Largest Forest State—Assam.

Most populated State—Uttar Pradesh (88,364,779 in 1971).

Most Literate State/Territory of India—Chandigarh (61.24 p.c.).

Longest Tunnel—Jawahar Tunnel, linking Punjab and Kashmir. 1¾ miles long.

Longest Dam—Hirakud Dam, Orissa (15,748 m.).*

Highest Waterfalls—Jog Falls (Mysore), 960 ft.

FIRST BEGINNING IN INDIA

1781—First Newspaper—Hickey's Calcutta Gazette on 29 Jan.

1825—First issue of Postal Stamp in India in Sind.

1851—First Official Telegraph Line between Calcutta and Diamond Harbour (24 Prgs.) in October.

1853—First Indian Railway, Bombay to Thana on 16th April.

1854—First Postage Stamp in India on 1st Oct.

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* Also in the world.

1887—First Modern Steel Plant at Kulti.

1897-98—First Hydro-electric Station set up at Darjeeling.

1911—First Air-mail in India and the world from Bombrauli to Naini (Allahabad), 6 miles.

1925—First Electric Train Service between Bombay and Kurla.

1927—Wireless Broadcasting by a private company at Bombay.

1929—First issue of Air Mail Stamp.

1956—First large-scale nuclear reactor Apsara was put into operation on 4th August.

1974—First nuclear device exploded on 18th May.

FIRST AMONG INDIANS

First visited England—Raja Rammohun Roy (1832).

Governor—Lord S. P. Sinha,

F.R.S.—A. Carsetji.

Congress President—W. C. Bonerjee (1885).

Nobel Prize Winner—Rabindranath Tagore (1913).

Member, House of Lords—Lord S. P. Sinha of Raipur.

Field-Marshal—S. H. F. J. Manekshaw.

Commander-in-Chief—General K. M. Carriappa.

Naval Chief—Vice-Admiral R. D. Katari.

Air Chief—Air Marshal S. Mukherjee.

I.C.S.—Satyendranath Tagore.

1st in I.C.S. examination—Sir Atul Chandra Chatterjee.

Member, British Parliament—Dadabhai Naoroji.

Bar-at-Law—J. M. Tagore.

Judge, High Court—Ramaprasad Roy.

Baronet—Sir Cawasji Jehangir.

Governor-General of India—C. Rajagopalachari (1948-49).

President of India—Dr. Rajendra Prasad.

Lenin Peace Prize Winner—Dr. Safiuddin Kitchlu (1952).

Member, Viceroy's Executive Council—Sir S. P. Sinha.

Member, India Council—Sir K. G. Gupta.

Peer of the British Realm—Lord S. P. Sinha.

Contested for membership of the British Parliament—Lalmohan Ghosh.

Member of the U.S. Congress—Dilip Singh Saund.

Wrangler, Cambridge University—A. M. Bose.

Test Cricket Player—K. S. Ranjitsinji.

Everest Climber—Tenzing Norgay.

Winner of Victoria Cross—Khudadad Khan.

Member, Privy Council—Syed Ameer Ali.

I.M.S.—Dr. Goodeve Chukravarti.

Woman Governor—Sarojini Naidu.

Woman M.A.—Chandramukhi Bose.

Woman M.B.—Virginia Mary Mitra.

Woman Doctor — Kadambini Ganguli.

Woman President of the Congress —Sarojini Naidu (1925).

Woman High Court Judge—Anna Chandi (Kerala).

Woman President of the U.N.—Vijayalakshmi Pandit (1953-54).

Woman Minister of a State—Vijayalakshmi Pandit (U.P.).

Woman Chief Minister—Sucheta Kripalani (of U.P., 1963-67).

Woman Parachutist—Gita Chanda.

Woman Speaker—Sushila Nayar (Delhi).

Woman Mayor—Sulochana Modi (Bombay).

Woman Ambassador—Vijayalakshmi Pandit (to USSR, 1947-49).

Woman Barrister—Cornelia Sorabji.

Woman Pleader—Regina Guha.

Constitution of India

SOVEREIGN DEMOCRATIC REPUBLIC—The Constitution of India, which came into force on January 26, 1950, resolves to establish a sovereign democratic republic.

The Preamble embodies the resolve of the people of India to secure for all citizens :

JUSTICE, social, economic and political ;

LIBERTY of thought, expression, belief, faith and worship ;

EQUALITY of status and of opportunity ; and to promote among them all ;

FRATERNITY, assuring the dignity of the individual and the unity of the Nation.

STATES AND TERRITORIES—The following are the States of India, each with a Governor as its head : Andhra Pradesh, Assam, West Bengal, Bihar, Maharashtra, Gujarat, Haryana, Himachal Pradesh, Madhya Prodesh, Tamil Nadu, Orissa, Punjab, Uttar Pradesh, Kerala, Rajasthan, Karnataka, Jammu & Kashmir, Nagaland, Meghalaya, Manipur, Tripura and Sikkim.

UNION TERRITORIES are : Delhi, Andaman & Nicober Islands, Lakshadweep, Pondicherry, Mizoram, Arunachal Pradesh, Dadra and Nagar Haveli, Goa, Daman & Diu, Chandigarh and such territories as may be acquired.

FUNDAMENTAL RIGHTS—Fundamental Rights have been grouped under following seven heads—

RIGHTS TO EQUALITY—Discrimination against any citizen on ground of religion, race, caste, sex or place of birth is phohibited. In public employment, the Constitution assures equality to opportunity for all. It has established social equality by abolition of title, local and foreign.

RIGHTS TO FREEDOM—guarantees : (a) freedom of speech and expression, (b) to assemble peacefully and within arms, (c) to form associations or unions, (d) to move freely throughout India, (e) to reside and settle in any part of India, (f) to acquire, hold and dispose of properties, (g) to practice any profession, trade or business.

RIGHTS AGAINST EXPLOITATION—Traffic in human beings is declared a punishable offence. So too is begar (forced labour) without payment or any form of forced labour except compulsory service for the State for public purposes.

FREEDOM OF RELIGION—Subject only to public order, morality, health and some other essential provisions, all persons are equally entitled to freedom of conscience and the right to profess, practice and propagate religion freely.

CULTURAL AND EDUCATIONAL RIGHTS—The Constitution provides for the protection of the interests of linguistic, cultural and religious minorities and their right to establish and administer their educational institutions.

RIGHTS TO PROPERTY—No person shall be unlawfully deprived of his property, movable or immovable.

RIGHTS TO CONSTITUTIONAL REMEDIES—The Constitution guarantees the right to every citizen to move the Supreme Court for the enforcement of all fundamental rights. And for that purpose the Supreme Court is given general powers to safeguard these rights as well as the power to propose particular remedies, such as habeas corpus, mandamus, quo warranto, etc.

DIRECTIVE PRINCIPLES OF STATE POLICY—The Indian Constitution lays down certain Directive Principles of State Policy enjoining the State to undertake within its means, a number of welfare measures. These are intended to assure citizens an adequate means of livelihood, raise the standard of living, improve public health, provide free and compulsory education for children, and assure that the operation of the economic system does not result in the concentration of wealth and means of production to the detriment of the common good. These principles, though not enforceable through courts of law, are regarded as fundamental in the governance of the country.

FRANCIHSE—The Constitution confers the right of vote to every person who is a citizen of India and who is not less than 21 years of age on a fixed date and is not otherwise disqualified under the

Constitution or any law of the appropriate legislature on the ground of non-residence, unsoundness of mind, crime or corruption or illegal practice.

CITIZENSHIP—The Constitution provides for single and uniform citizenship for the whole of India. Birth within the territory of India, descent from Indians parents or residence for a period of five years at the commencement of the Constitution, entitles one to be a citizen of India. Displaced person from Pakistan are also enabled to become citizens after fulfiling certain conditions. Persons of Indian origin residing abroad can also become citizens by registering themselves as such with Indian diplomatic consular agencies in the countries of their residence. No such person who voluntarily acquires the citizenship of any foreign State is entitled to this right.

UNION—India is a Union of 22 federated States and 9 centrally-administered Territories with the President as the head of the Union and the Governors as the head of the States.

UNION EXECUTIVE—The Union Executive consists of the President, Vice-President, and a Council of Ministers with Prime Minister at its head.

(A) PRESIDENT—The President is the executive head of the Republic. All the executive powers of the Union, including the Supreme Command of the Defence Forces, are formally vested in the President and all executive actions are taken in his name. He is elected by an Electoral College consisting of the elected members of both Houses of Parliament and Legislative Assemblies of the States, by the system of proportional representation by single transferable vote.

The qualifications for the office of the President—(1) He should be a citizen of India ; (2) must have completed the age of 35 years ; and (3) qualified for election as a member of the House of the People. He will not be eligible for election if he holds a job in Government, giving him financial rewards.

Terms of office—The President holds office for five years and is eligible for re-election.

Salary and Allowances—The President draws a salary of Rs. 10,000 per month and other allowances and privileges.

Impeachment—The President may be removed from his office by impeachment for violation of the Constitution.

(B) VICE-PRESIDENT—is the ex-officio Chairman of the Rajya Sabha. Any citizen of India aged thirty-five years and above and qualified for the membership of Rajya Sabha, can be elected to this office by both Houses of Parliament at a joint sitting on the basis of proportional representation by single transferable vote. His term of office is for five years. When the President is ill, or if he resigns or dies or is removed or is for any reason absent, his place will be taken by the Vice-President, till a new President is elected. The Vice-President may be removed from his office by a resolution of the Rajya Sabha passed by a majority of all the members of the Rajya Sabha and agreed to by the House of the People (Lok Sabha).

(C) COUNCIL OF MINISTERS—The Constitution provides for a Council of Ministers to aid and advise the President. The actual executive authority is discharged by the Prime Minister and the Council of Ministers appointed by him ; all of them are collectively responsible to the Lok Sabha. The Council of Ministers holds office during the pleasure of the President.

The Council of Ministers as at present constituted comprises (i) Ministers who are members of the Cabinet, (ii) Ministers of State who are not Ministers of the Cabinet but hold Cabinet rank and (iii) Deputy Ministers.

(D) ATTORNEY-GENERAL OF INDIA—is appointed by the President and shall hold office during the pleasure of the President to give advice on such legal matters and to perform such other duties of a legal character, as may from time to time be referred to him.

LEGISLATURE (PARLIAMENT)—The Legislature of the Indian Union consists of the President and two Houses—(1) Lok Sabha (House of the People) and (2) Rajya Sabha.

LOK SABHA—consists of members directly elected from the territorial constituencies in the States. The number of seats for each State is so allocated that the ratio between the number and population of the State is, as far possible, the same for all States. Up to 1980 the President can nominate 2 members to the House of the People to represent Anglo-Indian community. Unless dissolved sooner, the term of the House is five years from the date of its first meeting.

RAJYA SABHA—consists of not more than 250 members, of whom 12 are nominated by the President and the rest are elected. The nominated members should be men of learning and wide experience, such as artists, writers, scientists and social workers. The Rajya Sabha is not subject to dissolution, a third of its members retiring after every two years. The elections to the Sabha are indirect, the allotted quotas of the representative of each State being elected by the elected members of the Legislative Assembly of that State in accordance with the system of proportional representation be means of a single transferable vote. The Vice-President of India is the ex-officio Chairman of the Rajya Sabha.

POWER AND PRIVILEGES OF THE PARLIAMENT—The Constitution confers certain powers and privileges on members of the Houses of Parliament. No member of Parliament "shall be liable to any proceedings in any court in respect of anything said or any vote given by him in Parliament or any committee thereof, and no person shall be so liable in respect of the publication by or under the authority of either House of Parliament of report, paper, votes or proceedings The powers, privileges and immunities of members of each House of Parliament shall be such as may from time to time be defined by Parliament by law and until so defined, shall be those of the House of Commons of the Parliament of the United Kingdom, and of its members and committees."

The difference between the Lok Sabha and the Rajya Sabha is as follows:

The difference is not merely in their size. The powers given to them are not same. The function of both is to legislate but the greater part of this responsibility will be borne by the Lower House. A bill has to be passed by both the Houses before it becomes a law. In case there is a disagreement between the two Houses, a joint session of the Houses is summoned to resolve the deadlock. The opinion of the Lower House will ultimately prevail owing to its numerical majority. But it is to be noted here that procedure regarding deadlock relates only to bills other than money bills, for, as regards money bills, the provision of the Constitution is that sole power shall belong to the Lower House. Money bills cannot be introduced in the Rajya Sabha. They must, as rule, originate in the House of the People (Lok Sabha).

JUDICIARY—The Supreme Court of India consists of a Chief Justice and 14 judges appointed by the President. The judges hold office till the age of 65.

The Supreme Court decide disputes between the Government of India and any State or States or between two or more States involving any question of law or fact. Civil and criminal appeals of a certain kind from High Courts will also be heard by it. The Supreme Court, is also competent to order the enforcement of Fundamental Rights. It has also Advisory Jurisdiction by which the President can refer to it any question of public importance. The law declared by it is binding on all courts of the country. There is a High Court in each State, which stands at the head of the State's judicial administration. Each High Court consists of a Chief Justice and a number of judges appointed by the President. Judiciary is independent of the executive and the legislature.

COMPTROLLER & AUDITOR-GENERAL—Articles 148 and 151 provide for the appointment of a Comptroller & Auditor-General of India by the President to keep watch on the accounts of the Union and the States. His duties and powers are prescribed under law made by Parliament. His reports, submitted to the President and the Governors of States, are laid before each House of Parliament and the Legislators of States respectively.

STATE GOVERNORS—The State Executive consists of the Governor and a Council of Ministers with a Chief Minister as its head. He is appointed by the President and holds office during his pleasure. Any citizen of India who has completed 35 years of age, is eligible for the appointment as Governor. The Governor holds office for a term of five years unless he resigns earlier. Besides official residence, Govrenor draws a salary of Rs. 5,000 per month and other allowances and privileges.

The Governor is assisted by a Council of Ministers with the Chief Minister at the head of the Council to aid and advise the Governor. The Chief Minister is appointed by the Governor and the other Ministers are also appointed by him on the advice of the Chief Minister. Ministers hold office during the pleasure of the Governor. The Council of Ministers is collectively rseponsible to the Legislative Assembly of the State.

STATE LEGISLATURES—In every State the Legislature consists of the Governor and the two Houses, Legislative Council and Legislative Assembly (except in case of Assam, Gujarat, Haryana, Kerala, Orissa, Punjab, Rajasthan and West Bengal, which have only one House—the Legislative Assembly).

The Legislative Assembly (Bidhan Sabha) of each State is elected by direct election on the basis of adult franchise. The total number of the Assembly members shall in no case be more than 500 or less than 60 chosen by direct election. Its normal life is five years. Some seats may be reserved for Scheduled Castes. The Governor may also nominate the representatives of Anglo-Indian community.

The total number of members of the Legislative Council (Bidhan Parishad) of a State is not to exceed one-third of the total members in the Legislative Assembly of that State but in no case shall be less than 40. This is a permanent body ; one-third of its members retire every second year. Half of its members are elected from local bodies, from among the graduates of three year's standing and teachers who have worked for at least three years. A third of the members are elected by the Legislative Assembly from among non-members and the rest are nominated by the Governor from among men of eminence in literature., art, science or social service.

The Legislative Assembly alone has power to originate money bills. The Legislative Council can make only recommendation in respect of changes within a period of 14 days of the receipt of the bill from the Assembly. This should in no way affect the freedom of the Assembly to accept or reject the recommendations of the Council.

STATE JUDICIARY—The Constitution envisages a High Court for each State. The High Court consists of a Chief Justice and such other judges as the President may from time to time deem it necessary to appoint. The Chief Justice of a High Court is appointed by the President, in consultation with the Chief Justice of the Supreme Court and the Governor of the State. The proceedure for appointing other judges is the same except that the Chief Justice of the High Court concerned is consulted. They hold office until they attain the age of 62 years and are removable from office in the same manner as a judge of the Supreme Court.

Under Article 226, every High Court has the power to issue to any person or authority, including any Government within its jurisdiction, directions, orders or writs including writs which are in the nature of habeas corpus, mandamus, prohibition, quo warranto and certiorary or any of them for enforcement of any rights conferred by Part II of the Constitution and for any other purpose. High Courts have powers of superintendence over all courts and tribunals within their jurisdiction.

UNION TERRITORIES—In the place of centrally-administered Part 'C' States, the Constitution (7th Amendment) Act of 1956 substituted the category of Union Territories. The Union Territories include Delhi, Andaman & Nicobar Islands, Lakshadweep, Dadra and Nagar Haveli. Goa, Daman & Diu, Pondicherry, Chandigarh, Mizoram and Arunachal Pradesh.

The Constitution (14th Amendment) Act of 1963 creates legislatures in Union Territories. At present the Act relates to the territories of Goa, Daman and Diu, Mizoram and Pondicherry. They have legislatures. The Act also provides that the number of states alloted to Union Territories in the Lok Sabha be increased to a maximum of 25.

RELATION BETWEEN UNION & THE STATES—Parliament can legislate for the whole or any part of the territory of India and the Legislature of a State for whole or any part of the State. No law, however, made by the Parliament can be considered invalid on the ground of extra-territorial jurisriction. For the purpose of distributing legislative powers between the Centre and the States, three comprehensive lists have been drawn up—(1) Union List, (2) Concurrent List and (3) State List.

The Parliament has "executive power" to make laws in regard to the matters mentioned in the first list, i.e., Union List. The Concurrent List means that matters shared between the Union and the States, such as criminal law, civil procedure, preventive detention, marriage and divorce, transfer of property other than agricultural lands, contracts, bankruptcy.

There are 66 items in the State List. Some of them are police administration of justice, prisons, local government, public health and sanitation, forests, fisheries, etc. The Legislature of a State has "exclusive powers" to make laws in matters mentioned in this List.

Jurisdiction over all other matters not mentioned in the Concurrent and State Lists belongs to the Parliament. This means that the Union acquires residuary powers.

As regards Administrative Relations, the executive powers of every State shall be so exercised as to ensure compliance with the laws made by the Parliament and any existing laws which apply in the State, and the executive power of the Union shall extend to the giving of such direction to the State as may appear to be necessary for that purpose.

Union executive is empowered to give direction to a State regarding construction and maintenance of the means of communication declared to be of national or military importance. Parliament can declare certain highways or waterways to be national highways or waterways. Union executive can also construct and maintain means of communication required in connection with naval, military and airforce works. The President may, with the consent of the Government of a State, entrust to that Government functions in relation to any matter to which the executive power of the Union exists.

INTER-STATE COUNCIL—The President has power to establish an Inter-State Council to investigate and discuss subjects of common interest between the State and the Union, to enquire and advise upon Inter-State disputes and to impart greater cohesion to the federal structure and to harmonize the relation between the units.

ZONAL COUNCILS—have been established by the State Reorganisation Act of 1956 to advise on matters of common interest to each of the five zones into which territory of India has been divided.

ELECTION—The superintendence, direction and control of election to Parliament and Legislatures of every State and of President and Vice-President including appointment of an Election Tribunal, is vested in an Election Commission to be appointed by the President. The Chief Election Commissioner cannot be removed from his office except in the same manner as and on the like ground as a judge of the Supreme Court.

There is only one general electoral role for every territorial constituency and no person is ineligible for inclusion in such role on ground only of religion, race, caste, sex or any of them.

BACKWARD CLASSES—Article 15 prohibits discrimination against any citizen on grounds only of religion, caste or the like. Art. 20(2) guarantees that no citizen shall be denied admission into any State-owned or State-aided educational institution on grounds only of religion, caste or the like. Art 16 guarantees equality of opportunity to all citizens in the matter of employment under the State.

The Constitution makes special provision for the representation of the Scheduled Castes and Tribes in the House of the People and in the Legislative Assemblies of the States and also for the consideration of their special classes in the matter of appointments.

FINANCIAL AND OTHER PROVISIONS—There is a provision in the Constitution for setting up of a Finance Commission to make recommendation to the President as to the distribution between the Centre and the States of the net proceeds of certain taxes (like the income-tax, excise duties, some export duties, etc.), and the allocation between the States of such proceeds.

The Central and State Governments are required to set up respectively the Consolidated Fund of India and the Consolidated Fund of the State. All revenue received by the Government of India and the Government of a State are to be credited into their respective consolidated funds. No money is to be appropriated from the Consolidated Fund of India or of a State except in accordance with an Appropriation Act passed by the Parliament or the Legislature of the State concerned. Provision has also been made for the establishment of a Contingency Fund of India and a Contingency Fund for each State to meet unforeseen expenditure pending proper authorisation by the appropriate legislature.

Supplementary Estimates—are distinguished from annual estimate which are included in the Annual Financial Statement or Budget. Notwithstanding the grant of annual estimates, the need for supplementary or additional grants may arise when the amount specified in the annual estimate is found insufficient for the current year for some new service.

TRADE AND COMMERCE—The Constitution provides for the broad principles of freedom of trade, commerce and intercourse throughout of territory of India. The Union Parilament and the State Legislature are, however, authorised to prescribe limitations when there is scarcity of any particular commodity or for any other consideration of national or public interest. Subject to these restriction, the State Legislatures are empowered to impose reasonable restrictions on the freedom of trade, commerce or intercourse in the public interest. The Parliament has also power to appoint any authority to enforce the foregoing provisions..

EMERGENCY AND SPECIAL PROVISIONS—If at any time the President of India is satisfied that there arisen a grave emergency created by war or external aggression or internal disturbance which threatens the security of India or any part of its territory, he can by declaration (a) give direction to Constituent States as to how the authority is to be exercised and (b) suspend from operation several Articles (268 to 280) of the Constitution. Another occasion on which the President can by proclamation assume to himself all or any of the function of the Government of a State is in the event of failure of the State's constitutional machinery.

OFFICIAL LANGUAGE—Article 343 of the Constitution provides that the official language of India shall be Hindi in the Devnagri script and the form of numerals for official purposes shall be the international form of Indian numerals. English, which was originally to continue as the official language up to January 26, 1965, will, under the Official Languages Act, 1963, continue to be used even after that in addition to Hindi.

AMENDMENT OF THE CONSTITUTION—Article 368 provides for the amendment of the Constitution. The Constitution shall stand amended when the President gives assent to any bill for the purpose, after it is passed in each House of Parliament by a majority of not less than two-thirds of the members of the House present and voting. The only provision for the amendment, of which ratification by the Legislatures of the not less than one-half of the States has also been prescribed, relates to the Supreme Court and High Courts, the distribution of legislative powers between the Centre and the States, the representation of the States in Parliament and the procedure for amendment of the Constitution.

Since the inauguration of the Constitution on January 25, 1950, there have been a number of Amendments of the Constitution.

1. CONSTITUTION (FIRST AMENDMENT) ACT, 1951—By this, besides making minor changes in Articles 15, 19, 85, 87, 174, 176, 341, 342, 372 and 375. It added two new Articles, 31A and 31B and the 9th Schedule.

By an amendment of clause (2) of Article 19, it has permitted reasonable restrictions to be imposed by law on the exercise of the right of freedom of speech and expression in the ground of incitement of an offence. An amendment of clause (6) of Article 19 has, however, removed from the scope of judicial review, or on ground of reasonableness, restrictions imposed on the right of citizens to carry on any trade, business, industry or service where such restrictions have been imposed with a view to enabling the State to undertake any scheme of nationalisation.

To Article 15, sub-clause (4) as inserted stating that the State can make special provision for the advancement of any socially and educationally backward classes or for the Scheduled Castes and the Scheduled Tribes.

Two new Articles, 31A and 31B, were inserted. Article 31A provides that no law providing for the requisition by the State of any estate or of any rights therein or for the extinguishment or modification of any such rights shall be deemed to be void on the ground that it is inconsistent with, or take away or abridges any of the rights conferred by any provisions of this Part (III).

To preserve the Zamindari Abolition Acts by various States in India, Article 31B provides that none of the Acts and Regulations specified in the Ninth Schedule nor any of the provisions thereof shall be deemed to be void, or even to have become void, on the ground that such Act, Regulation or provision is inconsistent with, or takes away or abridges any of the rights conferred by any provisions of Part III, and notwithstanding any judgement, decree or order of any court or tribunal to the contrary, each of the said Acts and Regulations shall continue in force.

2. CONSTITUTION (SECOND AMENDMENT) ACT, 1952—amended Article 81 for readjusting the scale of representation in the House of the People, necessitated by the completion of the 1951 census.

3. CONSTITUTION (THIRD AMENDMENT) ACT, 1954—substituted entry 33 of the Concurrent List in the 7th Schedule by a new one, including food-stuffs, cattle fodder, raw cotton and jute as additional items, whose production and supply can be controlled by the Centre, if expedient in the public interest.

4. CONSTITUTION (FOURTH AMENDMENT) ACT, 1955—amended Articles 31, 31A and 305 and added a few more entries to the 9th Schedule. The amendment of Art 31(2) provides that when the State compulsorily acquires private property for a public purpose, the scale of compensation prescribed by the authorising legislation would not be called in question in a Court. The Article 31A was amended so as to exclude the temporary taking over a property by the State, either in the public interest or to secure its better management, from the compensation clause. The amendment of Art. 305 was in the nature of a saving clause for laws providing State monopolies. 7 new entries were added to the 9th Schedule.

5. CONSTITUTION (FIFTH AMENDMENT) ACT, 1955—substituted the provisions to Art. 3 by a new one, empowering the President to fix a time limit by State Legislatures to express views on proposed Central laws affecting the area and boundaries, etc. of their respective States.

6. CONSTITUTION (SIXTH AMENDMENT) ACT, 1956—added a new entry 92A to the Union List of the 7th Schedule relating to taxes on the sale and purchase of goods in the course of inter-State transactions and the relevant clauses under Articles 269 and 286 on the same subject.

7. CONSTITUTION (SEVENTH AMENDMENT) ACT, 1956—was passed for the reorganisation of the States. It involved not only the establishment of new States and alterations in States boundaries but also the abolition of three categories of the States and the classification of certain areas as Union Territories. This led to the amendment of Article 1 and the First Schedule to the Constitution. Among

the other important Articles which were affected by this Amendment were Articles 81 and 82 which were substituted by new ones ; Article 131 on the original jurisdiction of the Supreme Court ; Article 168 providing for bicameral legislatures in certain States ; and Articles 216, 217, 220, 222 and 224 dealing with the High Courts. Two new Articles 350A and 350B were added to implement the recommendations of the State Reorganisation Commission regarding constitutional safeguards for linguistic minorities.

8. CONSTITUTION (EIGHTH AMENDMENT) ACT, 1959—amended Article 334 so as to extend the special provision relating to reservations of seats for the Scheduled Castes and the Scheduled Tribes and representation of Anglo-Indian by nomination in the House of the People and Legislative Assemblies of States, for a further period of ten years from January 26, 1960.

10. CONSTITUTION (TENTH AMENDMENT) ACT, 1961—incorporated former Portuguese enclaves of Dadra and Nagar Haveli within Indian and provided for their administration under the rule-making powers of the President (Art. 240).

11. CONSTITUTION (ELEVENTH AMENDMENT) ACT, 1961—obtained the necessity of a joint meeting of the two Houses of Parliament (Art. 66) by forming them into an Electoral College for the election of the Vice-President. It also amended Art. 71 so as to make it clear that the election of the President or the Vice-President should not be challenged on the ground by any vacancy for whatever reason in the appropriate Electoral College.

12. CONSTITUTION (TWELFTH AMENDMENT) ACT, 1962—was passed in March 1962 by which as from December 20, 1961, the territories of Goa, Daman and Diu became part of the territory of India. From that day they are being administered as a Union Territory in accordance with Article 240 of the Constitution.

13. CONSTITUTION (THIRTEENTH AMENDMENT) ACT, 1962—created Nagaland as the sixteenth State in the Indian Union (Art. 371A).

14. CONSTITUTION (FOURTEENTH AMENDMENT) ACT, 1962—created legislatures in the Union Territories. The Act relates to the territories of Himachal Pradesh, Manipur, Goa, Daman and Diu, and Pondicherry. They will have new legislatures on the pattern that prevailed in some of the former Part 'C' States. The Act also provides that the number of seats allowed to Union Territoires in the Lok Sabha shall increase to a maximum of 25.

15. CONSTITUTION (FIFTEENTH AMENDMENT) ACT, 1963—makes the President of India in consultation with the Chief Justice of India, the final arbiter in a dispute about a High Court Judge's age and shortens the hitherto dilatory procedure for disciplinary action against Government employees.

16. CONSTITUTION (SIXTEENTH AMENDMENT) ACT, 1963—empowers the States to enact any legislation imposing reasonable restrictions on the exercise of fundamental Rights in the interest of sovereignty and integrity of India. The Act amends clauses 2 and 4 of Article 19 of the Constitution. It also amends Arts. 84 and 173 and the forms of oath in the Third Schedule to the Constitution so as to provide that every candidate for the membership of Parliament and State Legislatures, Union and State Ministers, members of the Parliament and State Legislatures, Judges of the Supreme Court and High Courts and Comptroller and Auditor-General of India should take oath to uphold the sovereignty and integrity of India.

17. CONSTITUTION (SEVENTEENTH AMENDMENT) ACT, 1964—amended Article 31 with a provision that where any law provides for the acquisition by the States of any land held by a person under his personal cultivation, the State cannot lawfully acquire any portion of such land within the ceiling limit unless the law ensures compensation payable at the market value. It also redefines the expression "estate" and extends protection to 64 State land enactments so that their validity is not questioned.

18. CONSTITUTION (EIGHTEENTH AMENDMENT) BILL, 1964—has not yet been enacted by Parliament.

19. CONSTITUTION (NINETEENTH AMENDMENT) ACT, 1966—amended Article 324. In the said Article, in clause (1), the words "including the appointment of election tribunals for the decision of doubts and disputes arising out of or in connection with elections to Parliament and to the Legislatures of States" shall be omitted.

20. CONSTITUTION (TWENTIETH AMENDMENT) ACT, 1966—inserted a new Article 233A, validating the appointment, posting, promotion or transfer of a person as a district judge, if such appointment was illegal or void by reason of its not being in accordance with Article 233 or 235 (dealing with control oevr subrodinate courts by High Court, etc.).

21. CONSTITUTION (TWENTY-FIRST AMENDMENT) ACT, 1967—amended the English Schedule to the Constitution and recognised "Sindhi" as the official language.

22. CONSTITUTION (TWENTY-SECOND AMENDMENT) ACT, 1969—inserted a new Article 244A by which formation of an autonomous State comprising certain tribal areas in Assam and creation of local legislature or Council of Ministers or both therefore are provided. It also amended Article 275 and inserted a further new Article 371B.

23. CONSTITUTION (TWENTY-THIRD AMENDMENT) ACT, 1969—amended Articles 330, 332, 333 and 334. This Act extended by another 10 years from 1970 the Constitutional safeguards guaranteed to the Scheduled Castes, Scheduled Tribes and Anglo-Indians.

24. CONSTITUTION (TWENTY-FOURTH AMENDMENT) ACT, 1971—amended Articles 13 and 368 of the Constitution so as to provide that an abridgment of Fundamental Rights can be brought about in the same manner as a modification of any other constitutional provision. The Act also made it obligatory on the part of the President to give his assent to any future Constitution Amendment Bill, passed by both Houses of the Parliament.

25. CONSTITUTION (TWENTY-FIFTH AMENDMENT) ACT, 1971—amended Article 31(2) of the Constitution so as to make it clear that the legislatures can pass a law for the acquisition or requisition of any property for an amount which may be fixed by such law or which may be determined in accordance with such principles and given in such manner as may be specified in such law, shall not be questioned in any court. The above Amendment also inserted a new Article 31C which says "Notwithstanding anything contained in Article 13, no law giving effect to the policy of the State towards securing the principles specified in Clause (b) of Clause (c) of Article 39 shall be deeemed to be void on the ground that it is inconsistent with, or takes away or abridges any of the rights conferred by Articles 14, 19 or 31" and a law thus passed by the legislatures shall not be questioned in any court.

26. CONSTITUTION (TWENTY-SIXTH AMENDMENT) ACT, 1971—deleted Articles 291 and 362 of the Constitution which provided for privy purses and certain right and privileges of rulers of Indian States. It also incorporated a new Article 363A.

27. CONSTITUTION (TWENTY-SEVENTH AMENDMENT) ACT, 1971—included the Union Territory of Mizoram in Article 239A of the Constitution to provide for a legislature and council of ministers for the territory.

28. CONSTITUTION (TWENTY-EIGHTH AMENDMENT) ACT, 1971—empowered the President to make a declaration of emergency restricted to certain parts of the country.

29. CONSTITUTION (TWENTY-NINTH AMENDMENT) ACT, 1972—ensured the take-over of land in excess of any ceiling imposed by the States without payment of compensation, at market value.

30. CONSTITUTION (THIRTIETH AMENDMENT) ACT, 1972—increased the elective strength of the Lok Sabha from 525 to 545.

31. CONSTITUTION (THIRTY-FIRST AMENDMENT) ACT, 1972—enabled Parliament to vary or revoke by law the conditions of service and privileges of ICS officers. It deleted Article 314 of the constitution which gave protection to the ICS officers' conditions of service and privileges.

32. CONSTITUTION (THIRTY-SECOND AMENDMENT) ACT, 1972—Provided for the inclusion of the Kerala Land Reforms (Amend-

ment) Act, 1969 and the Kerala Land Reforms (Amendment) Act, 1971 in the Ninth Schedule of the Constitution.

33. CONSTITUTION (THIRTY-THIRD AMENDMENT) ACT, 1974—amended Articles 101(3)(B) and 190(3)(B) of the constitution to prevent coercive and involuntary resignations by legislators.

34. CONSTITUTION (THIRTY-FOURTH AMENDMENT) ACT, 1974—invalidated the acceptance of resignation by members of the State Legislatures and Parliament, which were made under duress or coercion or any other kind of involuntary resignation.

35. CONSTITUTION (THIRTY-FIFTH AMENDMENT) ACT, 1974—provided for Associate status to Sikkim.

36. CONSTITUTION (THIRTY-SIXTH AMENDMENT) ACT, 1975—provided for integration of Sikkim with the Indian Union as the 22nd State of the Republic.

37. CONSTITUTION (THIRTY-SEVENTH AMENDMENT) ACT, 1975—provided for a Legislative Assembly and a Council of Ministers for the Union Territory of Arunachal Pradesh.

38. CONSTITUTION (THIRTY-EIGHTH AMENDMENT) ACT, 1975—amended Articles 113, 213, 289B, 352, 356, 359 and 360 of the Constitution. It made the declaration of Emergency by the President and the promulgation of Ordinances by the President, Governors and Administrative Heads of Union Territories non-justiciable (beyond the purview of the judiciary).

39. CONSTITUTION (THIRTY-NINTH AMENDMENT) ACT, 1975—amended Articles 71 and 329 of the Constitution, and the Ninth Schedule. It placed the election of the President, Vice-President, Prime Minister and the Speaker beyond judicial scrutiny.

40. CONSTITUTION (FORTIETH AMENDMENT) ACT, 1975—amended Art. 361 to extend immunity from legal process to the Prime Minister.

SCHEDULES

First Schedule (Articles 1 and 4)—1. States—Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Nagaland, Orissa, Punjab, Rajasthan, Tamil Nadu, Tripura, Uttar Pradesh, West Bengal. 2. Union Territories —Delhi, Andaman & Nicobar Islands, Lakshadweep, Pondicherry, Arunahcal Pradesh, Goa, Daman and Diu, Dadra & Nagar Haveli, Chandigarh, Mizoram.

Second Schedule (Part A)—Provisions as to the President and the Governors of States. The following emoluments per mensem shall be paid to—

The President	Rs. 10,000
The Governor of a State	,, 5,000

The President and the Governors of the States shall also be paid such allowances as were payable respectively to the Governor-General of India and the Governors of the corresponding Provinces immediately before the commencement of this Constitution.

—(Part B)—Omitted by the Constitution (Seventh Amendment) Act, 1956

—(Part C)—Provisions as to the Speaker and Deputy Speaker of the House of the People and the Chairman and the Deputy Chairman of the Council of States and the Speaker and Deputy Speaker of the Legislative Assembly and the Chairman and the Deputy Chairman of the Legislative Council of a State.

—(Part D)—Provision as to the salary of Judges of the Supreme Court and of the High Courts.

Chief Justice of Supreme Court per mensem	Rs. 5,000
Any other Judges of Supreme Court per mensem	,, 4,500
Chief Justices of High Courts	,, 4,000
Any other Judges of High Courts ..	,, 3,500

—(Part E)—Provisions as to the Comptroller and Auditor-General of India.

Comptroller and Auditor-General of India per mensem Rs. 4,000.

Third Schedule—Forms of Oaths or Affirmations.

Fourth Schedule—Allocation of seats in the Council of States—Andhra Pradesh 18, Assam 7, Bihar 22, Gujarat 11, Kerala 9, Madhya Pradesh 16, Tamil Nadu 18, Maharashtra 19, Karnataka 12, Orissa 10, Punjab 11, Rajasthan 10, Uttar Pradesh 34, West Bengal 16, Jammu & Kashmir 4, Nagaland 1, Delhi 3, Himachal Pradesh 2, Manipur 1, Pondicherry 1, Tripura 1=226.

Fifth Schedule—Provisions as to the administration and control of Scheduled Areas and Scheduled Tribes.

Sixth Schedule—Provisions as to the administration of Tribal Areas in Assam.

Seventh Schedule—List I—Union List ; List II—State List ; List III —Concurrent List.

Eighth Schedule—Languages : Assamese, Bengali, Gujarati, Hindi, Kannada, Kashmiri, Malayalam, Marathi, Oriya, Punjabi, Sanskrit, Sindhi, Tamil, Telegu and Urdu.

Ninth Schedule (Article 31B)—Bihar Land Reforms Act, 1950 : Bombay Maleki Tenure Abolition Act, 1949, Kerala Land Reforms (Amendment) Act, 1969 and 1971 etc.

INSTITUTE OF EDUCATION FOR WOMEN
Deptt of Extension
Services.

Education, Science & Culture

SCOPE AND FUNCTION—The scope and function of Union Government in the field of education are limited to the subjects included in the Union List of the Constitution for which Union Government have the sole responsibility. These are—maintenance of Central Universities and institutions of national importance declared as such, union agencies and institutions for professional, vocational or technical training or for promotion of special studies or research and co-ordinance and determination of standards in institutions of higher education or research. The Centre has also special responsibilities for the education of the scheduled castes and scheduled tribes. But it is to be noted under the Constitution, education is the direct responsibility of the State Governments. Though the education is essentially a State responsibility, one of the directives of the Constitution enjoins that the "State" shall endeavour to provide free and compulsory education for all children until they complete the age of 14 years. According to another directive of the Constitution the "State" is required to promote education and economic interest of the weaker section of the people. Emphasis is also laid in the Constitution on the need for economic and social planning, as mentioned in the Concurrent List. One of the special directive of the Constitution enjoins upon the Union Government the duty of developing, enriching and spreading the Hindi language. In the implementation of this directive, the Ministry of Education has an important role to play.

These obligations of the Union Government are discharged by the Ministry of Education and Youth Services. The responsibilities of the Union Government in the State sector of education are discharged through a broadbased system of grants-in-aid to the respective State Governments for developing their educational programmes.

The cultural programmes implemented by the Ministry emphasise such activities which express and promote the basic unity of Indian culture, contribute towards the promotion of emotional integration among people in various parts of the country and being the rural and urban people closer to one another. The Union Government have an extensive programme of cultural relation with many countries of the world. Through an exchange of cultural delegations and exhibitions, and through participation in international programmes in the field of arts this programme aims at projecting India's cultural heritage of other countries.

EDUCATION POLICY—A 17-point resolution on national education policy covering all important aspects, principles, stages and structure of education as also the basic goal and objective of national education was adopted by the Union Cabinet on July 17, 1968. This is the first educational policy resolution after transferred to provinces constituting British India. The last resolution was adopted by the British Government of India in 1913.

The key points in this comprehensive policy formulation and reconstruction of education are: (1) Free and compulsory education up to the age of 14 in fulfilment of the directive principle under Article 45 of the Constitution. (2) Improved status, emoluments and education of teachers. (3) Three-language formula and development of regional languages. (4) Equalisation of education of science and research. (5) Development of education for agriculture and industry. (6) Improvement of quality and production of cheap textbooks. (7) Investment of 6 per cent of national income on education. (8) Work experience and National Service etc.

EDUCATIONAL PROGRESS

Free School Education—The present position regarding free education in the country may be summarised as follows :

(1) All education is free in two States—Jammu and Kashmir and Nagaland. (2) Tamil Nadu has made all school education free including PUC classes. (3)All education up to the end of secondary stage is free in Andhra Pradesh, Kerala and Karnataka. (4) In Maharashtra, primary education is free and children of parents whose income is below Rs. 1,200 a year have free education at all stages. A similar position exists in Gujarat with some changes in income limits. (5) In Rajasthan, all education is free for girls and primary education is free for boys. (6) In Punjab, Haryana and Madhya Pradesh primary education is free. (7) In Uttar Pradesh education is free for girls till the end of Class X and for the boys till the end of Class VI. (8) In Bihar primary education is free in Classes I—VII. (9) In West Bengal primary education is free for girls in rural areas in Classes I—VIII. In rural areas and in some urban areas it is also free for boys in Classes I—V, but in Calcutta and some other urban areas it is not yet free. (10) In Orissa primary education is free. (11) In Assam primary education is free for girls in Classes I—VIII and for boys in Classes I—V. (12) In the Union Territory of Delhi, primary education is free. (13) The other Union Territories follow the pattern of one or other of the States. But in all of them, primary education is free.

The children of the scheduled castes and scheduled tribes get free education in addition, all educational institutions generally allow a certain percentage of free studentships.

Compulsory Primary Education Act has been passed by all the States except Nagaland and Himachal Pradesh.

The States of Andhra Pradesh, Karnataka, Kerala, Assam, Gujarat, Jammu & Kashmir, Maharashtra, West Bengal and Goa, Daman & Diu have introduced new pattern of education 10+2+3. U.P. has already in operation the 12-year period of education at school level.

The Educational Technology Project is designed to stimulate and promote integrated use of mass media and instructional technology at all levels of education. The Project is managed by the Centre of Educational Technology established as a separate institution of the NCERT at Delhi and by the educational technology cells in the States of Orissa, Andhra Pradesh, Karnataka, Madhya Pradesh, Maharashtra and Rajasthan.

National Foundation for Teachers' Welfare was set up in 1962 with the object of promoting the welfare of the teachers.

National Awards for Teachers was instituted in 1958 with the object of granting recognition to the teachers of outstanding merit.

National Council for Women' Education advise the Government on various matters relating to the education of girls and women and maintain contacts between the Government and its various organisations working in the field.

National Board of Audit Education—was constituted on 5.12.69.

An All India Council for Elementary Education advises the Central and State Governments in all matters relating to university education and preparation of programmes for the early implementation of compulsory and free education.

The Bal Bhavan and National Children's Museum was established in Delhi in June 1965. Their main purpose is to afford opportunities to children for education through recreation and physical activities.

Secondary Education—This covers the age-group 14-17. The Central Board of Secondary Education was set up on July 1, 1962, for conducting a common all India higher secondary examination. It caters to the educational needs of the children of the transferable Central Government Employees and makes its services available to any secondary school or outside India wishing to prepare candidates for its examination. The total number of schools recognised by the Board is now 781 including one in Tehran. An autonomous body, the Kendriya Vidyalaya Sangathan, has been set up for the sole purpose of administering the Kendriya Vidyalayas (Central Schools) established all over the country to facilitate the education of the children and wards of transferable Central Government employees, including defence personnel. It now conducts 169 schools. The Central Institute of English was established in November 1958, in Hyderabad as an autonomous institution with a view to reformulating the objectives of teaching English in India, modernising the methods of teaching English etc. State Bureaux of Educational and Vocational Guidance in different States have been carrying out a programme of training of career masters and guidance counsellors.

Central Tibetan Schools Administration is an autonomous organisation set up by the Government of India in 1961 to establish and to carry on the administration of the schools and institutions set up for the education or training of Tibetain refugee children. The Administration has been running 4 Residential Schools, one Educational-cum-Vocational Institute and 10 Day Schools.

State Institutes of Education—To improve the quality of education at the school level, particulary at the primary and middle school levels, the State Institutes of Education have been started under a Centrally sponsored scheme initiated during the 1963-64. The main functions of these Institutes are: to organise in service training for inspecting officers, staff of training institutions for elementary teachers; to conduct studies and investigations in the elementary teacher training and to produce literature for teachers and students. Central assistance on 100 per cent basis is given to the State Governments for running the Institutes. State Institutes have been established in all the States except Nagaland and Haryana. One State Institute was started in Delhi in 1966-67.

BASIC EDUCATION

Basic education has an activity-centered curriculam wherein the process of learning is co-related with the physical and social environment of the children. Education is imparted through socially useful productive activities like spinning and weaving, gardening, carpentary, leather works, book craft, domestic crafts, pottery, elementary engineering, etc.

The National Institute of Basic Education, set up in 1956, is engaged in carrying on research and in offering training and guidance to teachers and administrators of basic education. The Institute is now a constituent unit of the National Council of Education Research, and Training.

The National Basic Education, established in 1962, advises the Union Government on programme and policies and reviews progress.

HIGHER EDUCATION

In the field of higher education, in addition to the Constitutional obligations, the Government of India gives grants-in-aid to State Governments and voluntary organisations and operates a few programmes of international co-operation in education. It also conducts significant pilot projects in higher education of which the most important is that of Rural Institutes.

The Government is responsible for the maintenance of 7 Central universities : (1) Aligarh Muslin University ; (2) Banaras Hindu University ; (3) University of Delhi ; (4) Visva-Bharati University, Santiniketan ; (5) Jawaharlal Nehru University, New Delhi ; (6) North-Eastern Hill University, Shillong ; (7) University at Hydrabad.

Grants are made to ; Gujarat Vidyapith, Ahmedabad ; Kanya Gurukula, Dehra Dun ; Sri Aurobindo International Centre of Education, Pondicherry and Lok Bharati, Sanosara (Gujarat).

The Central Institute of Rashtrapati Niwas at Simla runs with Government's financial assistance.

Indian Institute of Advanced Study, Simla functioning since October 1965 to provide facilities for multifaculty advanced study and research to teachers and research workers.

Institute of Russian Studies, New Delhi was set up in November 1965 in collaboration with the Government of U.S.S.R.

An Inter-University Board was formed in 1925, for the discussion of university problems and for the mutual recognition of degrees and diplomas in India. The function of this Board is advisory.

Shastri Indo-Canadian Institute was established in Canada on 20th August, 1968 by the Government of India and Canada jointly to promote and foster the growth of research in Indian studies in Canadian universities.

Indian Council of Social Science Research—was founded in 1969.

Indian Council of Historical Research—has undertaken several projects to promote research in new and relatively less explored areas such as history of language, literature and philosophy, etc.

There are 3 types of universities in India : (1) Affiliating type which merely prescribe courses of study, conduct examinations and award degrees and diplomas but do not undertake the task of teaching ; (2) Affiliating and Teaching type which, in addition to carrying on functions of the affiliating type, offer teaching and research facilities ; (3) Residential and Teaching type which control all colleges under their jurisdiction and undertake teaching at all levels.

Many research laboratories and institutions are recognised by the Inter-University Board as centres of higher research.

University Grants Commission—was appointed in 1953 in pursuance of the recommendations of the University Education commission appointed by the Government in 1948. It was given an autonomous status by the U.G.C. Act of 1956, which requires the Commission to take such steps as it may think fit for the promotion and coordination of university education and for the determination and maintenance of standards of teaching, examination and research in universities. The grants are paid through U.G.C. to the Central Universities on 100 p.c. basis both for the maintenance and development and to all State universities on a sharing basis for their development projects only. The main works of the U.G.C. are : (1) development projects ; (2) improvement of salary scales to teachers ; (3) instructing an important scheme for setting up centres of advanced studies attached to different universities ; (4) construction of hostels ; (5) utilisation of services of retired teachers : (6) travel grants ; (7) exchange of teachers and (8) scholarships and fellowships.

HIGHER TECHNICAL EDUCATION

The Indian Institutes of Technology have been established with the main object of fostering post-graduate education and research in engineering and technology.

The Indian Institute of Technology, Kharagpur, the first in the chain of 5 higher technological institutes, started functionnig in 1951. The Indian Institute of Technology, Bombay and the Indian Institute of Technology, Madras, admitted the first batch of students in 1958 and 1959 respectively and the Institute of Kanpur in 1960. A new College of Engineering and Technology was established in New Delhi for under-graduate and post-graduate courses as well as research.

There are 137 institutions in the country, conducting courses in engineering and technology at the first degree level and 284 institutions conducting courses at the diploma level.

For the qualitative improvement of teachers in diploma institution, 4 teacher training institutions have been established at Madras, Bhopal, Calcutta and Chandigrah.

A National Institute for Training in Industrial Engineering was established in 1963 in Bombay in collaboration with the United Nations Special Fund. The Institute trains engineers and technicians in Works Management, Production, Planning and Control, Sales Organisation. A College of Architecture has been established at Chandigarh. The School of Planning and Architecture, New Delhi is the only institute of its kind offering post-graduate courses in Town Planning and Country Planning and Architecture in addition to providing normal facilities for the study of architecture at the undergraduate level. The Indian School af Mines, Dhanbad conducts five-year courses in Mining, Engineering, Applied Geology, Geo-physics and Petroleum Technology and has been declared as deemed University in 1966.

National Institute of Foundry and Forge, established by the All India Council for Technical Education, at Ranchi started functioning from December 1967. The Institute trains engineer specialists and technicians for foundry and forge industry.

Central Institute of Printing Technology—A school for starting the Central Institute has been approved by the all India Council for

Technical Education. The Institute will train executive personnel and specialists for printing industry and will be fully financed by the Central Government.

Technical Teachers' Training Institutes for Polytechnic Teachers ;—There are four such institutes in Madras , Chandigarh, Calcutta and Bhopal.

Institutes of Management—The central Government has also established two All-India Institutes of Management, one at Calcutta and another at Ahmedabad, in association with the State Government concerned.

The names of the institutions for Courses of Management, are :—

(1) Delhi School of Economics, Delhi University.

(2) Indian Institute of Social Welfare and Business Management, Calcutta.

(3) Jamnalal Bajaj Institute of Management Studies, Bombay University.

(4) Madras University.

(5) Victoria Jubilee Technical Institute, Bombay.

(6) Indian Institute of Management, Calcutta.

(7) Osmania University, Hyderabad.

(8) Thiagaraja Institute of Management Studies, Madurai.

(9) Indian Institute of Technology, Kharagpur (W.B.)

RURAL HIGHER EDUCATION

A National Council for Rural Higher Education in rural area was established in 1956, to advise the Government on all matters relating to the development of rural higher education. The Council has selected 15 institutions for development into rural institutes and these have started functioning at Sriniketan (W. Bengal), Gandhigram (Tamil Nadu), Jamianagar (Delhi), Udaipur (Rajasthan), Birouli (Bihar), Bichpuri (U.P.), Sanosara (Gujarat), Coimbatore (Tamil Nadu), Gargoti (Maharashtra), Amravati (Maharashtra), Rajpura (Punjab), Wardha (Maharashtra), Hanumanamathi (Karnataka), Thavanoor (Kerala) and Indore (M.P.). The courses adopted by the council are : (1) a three-year diploma course in rural science, (2) a two-year certificate course in rural science, (2) a two-year certificate course in agricultural science, (3) a three-year certificate course in civil and rural engineering, (4) a one-year sanitary inspectors' course and (5) a one-year preparatory course to initiate matriculates into three-year diploma course. Recognition of the diploma in rural sciences as equivalent to a first degree of a University for purpose of employment has been secured.

A concurrent course of general educatoin and teachers' training of three years' duration after the higher secondary stage has been introduced as pilot project at the Rural Institute at Gargoti.

A post-graduate diploma in rural economics and co-operation, started in 1961, has been provisionally recognised by the Government of India as equivalent to a M.A. degree of a recognised university.

SOCIAL EDUCATION

It aims at providing education for the betterment of life for the adult population. The social education provides an educational base for community development programmes and includes use of libraries, education in citizenship, cultural and recreational activities, utilization of audiovisual aids and organisation of youth and women's groups for community development. Following progress has been made in this direction : (1) Establishment of a National Centre for Fundamental Education at New Delhi, to train higher grade personnel for social educational works, research, etc, (2) Library Institute at Delhi University. (3) Delhi Public Library. (4) Social Education Institute for Industrial Workers at Indore and Nagpur. (5) Janata Colleges and Vidyapiths. The objective of the Vidyapiths is to train village youths for rural leaderships. (6) Production of literature for Social Education, such as prize competition for books for neo-literates (7) UNESCO Prize Competition for books for new-reading public (8) Sahitya Shibirs, the literary workshops for training authors in the techniques of writing books for neo-literates. (9) Direct production of new books. (10) National Book Trust. (11) Popular Literature Committee, advising the Government on matters relating to the production of literature for neo-literates and for new-reading public. In this sector the Government maintain, develop and help the development of a few libraries of all-India importance. There is an Institute of Library Science in Delhi for training up librarians.

Indian Council of Social Science Research—was established in April 1969 to aid, promote and co-ordinate research in social sciences. The Council has a total membership of 22 excluding the Chairman and the member-Secretary.

EDUCATION OF THE HANDICAPPED

A National Advisory Council advises the Government on all problems concerning education, training and employment of the physically and mentally handicapped. The following are the main institutions : (1) National Centre for the Blind, Dehra Dun, provides an integrated service for the blind. (2) A national library has been built up at Centre largely with the literature produced by its own press. (3) A training centre for the adult has been established at Hyderabad. (4) Special employment exchanges for the handicapped are located at Bombay, Delhi, Hyderabad, Madras, Jullunder, Kanpur, Ahmedabad, Bangalore and Calcutta. (5) A model school for blind children was establihsed at Dehra Dun in 1959. (6) A training Centre for the teachers of the blind was set up at Bombay in 1963. (7) A Central Braille Press was established by the Government of India in 1951 to produce literature for the blind. This institution produces literature in 10 languages of the country.

PHYSICAL EDUCATION, GAMES AND YOUTH WELFARE

The main object of the schemes in the field is to consolidate and extend programme of physical education, games and sports and youth welfare. Following are the main institutions and plans for physical education—(1) Lakshmibai College of Physical Education, Gwalior, started in 1957, is a national institutions to provide three-year dergee course in physical education ; (2) National Physical Efficiency Drive was launched by the Government of India in 1960 for activating interest in physical fitness and for arousing enthusiasm for higher standards of physical efficiency and achievement ; (3) Grants-in-aid to private physical education institutions and (4) Promotion of Yoga. The Central Advisory Board of Physical Education and Recreation has been reconstituted to advise the Government on the co-ordination of all programmes and activities in the field of physical education. A Society for the Administration of Central Institutes has been set up by merging the existing societies.

Games & Sports—(1) The Netaji Subhas National Institute of Sports began to function in March 1961. It is located at the Motibagh Estate, recommendations of the Kunzru Committee.

Games & Sports—(1) The Netaji Subhas National Institute of Sports began to function in March 1961. It is located at the Motibagh Estate. Patiala. Rajkumari Sports teaching schemes were merged into National Institute of Sports from 1961. (2) Assistance to National Sports Federation Association. (3) Construction of Stadia. (4) Establishment of Sports Village. (5) Arjuna Awards (see Index). (6) Indian Mountaineering Foundation.

All-India Council of Sports, established in 1954, advises the Government of India and the Sports Federations in the matter of development of games and sports.

National Discipline Scheme—was introduced in July 1954, to bring up younger generation under proper code of discipline and to instill in them ideals of good citizenship and comradeship. It is meant for the physical and general social training to make younger generation healthy, both in body and mind. The scheme has been extended in a large number of schools in several States.

Youth Welfare—The main objects in organising youth welfare programmes are two—(1) promotion of inter-state understanding and (2) development of the Spirit of Nationhood in the youth of the country.

National Service Scheme—Participation in the National Cadet Corps was so far compulsory for all male university students in the first and second year of the degree course. It has been decided that two alternative schemes should be developed, viz., (1) National Service Corps (NSC) ; or (ii) National Sports Organisation (NSO), in order that students may be able to undertake activities in which they are interested. The sports scheme will be open only to those students who excel in sports and games and have to spend a good deal of their time in that pursuit.

Students Welfare Boards—The Students Welfare Boards are designed to look after and promote the welfare activities for and among university/college students in order to enable them to utilise profitably their leisure hours. Under the scheme, the Centre gives assistance to universities to cover 50 per cent of the administrative expenditure (on approved items) incurred on such Boards.

Scouts and Guides—Financial assistance is given to the Bharat Scouts and Guides for their various activities.

SCHOLARSHIPS

The Union Government have evolved a large programme of scholarships for study in India and abroad. The various scholarships have been classified into following five sections :

1. Scholarships for Indian Nationals for Studies in India—National Scholarships Scheme for Post-Matric Education.

Scholarships for the children of Primary and Secondary School Teachers for Post-Matric Studies.

National Loan Scholarships Scheme.

Scholarships in Approved Residential Secondary Schools.

Scheme of Scholarships at the Secondary stage for talented students from rural areas.

Scholarships to Students from non-Hindi Speaking States for post-Matric Studies in Hindi.

2. Scholarships for Indian Nationals for Study Abroad—(a) Government of India Scheme—Partial Financial Assistance (Loan Scheme) provides for the grant of loans towards passage and other incidental expenses to students who have obtained admission in foreign universities. (b) National Scholarships for study abroad—This scheme provides financial assistance to meritorious students for post-graduate studies. (c) Commonwealth Scholarships and Fellowships Plan—to enrich countries of the Commonwealth by enabling an increasing number of their able citizens to share the wide range of educational resources available throughout the Commonwealth and thus promote equality of educational

opportunities at the higher level. This programme includes scholarships and fellowships in the following countries—Australia, Canada, Hong Kong, Jamaica, New Zealand, Nigeria, Sri Lanka and U.K. (d) Scholarships offered by foreign Governments/Institutions/Organisations : (i) Foreign Governments—Austria, Bulgaria, Czechoslovakia, Denmark, Finland, France, German Democratic Republic, Federal Republic of Germany, Greece, Hungary, Italy, Japan, Netherlands, Norway, Poland, Romania, Saudi Arabia, Sweden, Egypt, United Kingdom, U.S.S.R. and Yugoslavia. (ii) Institutions/Organisations—German Academic Exchange Service of Fedral Republc of Gerany ; Minna James Heinemann Foundation, Hannover ; Research Institute of Electrical Communication, Tohoku University, Japan ; Royal Commission Science Research London Exhibition of 1951 : Federation of British Industries Overseas Scholarship for Practical Training ; UNESCO.

3. Scholarships for Students belonging to Scheduled Castes, Scheduled Tribes and other Backward Classes—(a) Scholarships for Post-Matriculation Studies in India ; (b) Overseas Scholarships ; (c) Passage Grants.

4. Programme of Exchange of Scholars—With a view to promote cultural relations with foreign countries, the Government of India have entered into agreements on exchange of scholars with certain countries, such as Afghanistan, Bulgaria, Czechoslovakia, France, G.D.R., Greece, Hungary, Poland, Romania, Egypt, U.S.S.R., Yugoslavia.

5. Ssholarships for Foreign Nationals for Study in India.

SOCIAL AND CHILD WELFARE—The important measures in the field of social work include streamlining the schemes of the Central Social Welfare Board, strengthening training programmes for social work and encouraging voluntary organisations in various welfare activities. The following are the main programmes of : (1) Social Welfare—(a) Survey and Research programme ; (b) Social and Moral Hygiene and after care programme ; (c) Assistonce to voluntary organisations of Social welfare ; (2) Child Welfare—(a) integrated services for child welfare ; (b) Establishment of Balsevika training centre.

The Central Social Welfare Board was set up in Aug. 1953 with a view to providing representation to all the States. The main activities of the Board are as follows : (a) grants-in-aid programme ; (b) welfare extension projects ; (c) condensed course of education for adult women ; (d) socio-economic programme for women ; (e) production units for small industries ; (f) industrial co-operative societies ; (g) handicrafts units ; (h) holiday homes ; (i) child welfare programmes etc. At the State level, there are 24 State Social Welfare Advisory Boards.

DEVELOPMENT OF MODERN INDIAN LANGUAGES—The scheme envisages development of all modern Indian languages mentioned in the Constitution, excluding Hindi. Central Institute of Indian Languages, (Bharatiya Bhasha Sansthan), Mysore was inaugurated on 17th July, 1969. The Institute is set up to promote the development of all Indian languages. Four Regional Language Centres at Mysore, Bhubaneswar, Poona and Patiala have been established

INDIAN NATIONAL COMMISSION FOR CO-OPERATION WITH UNESCO—is an agency established by the Government of India with the three-fold task of promoting the understanding of the aims and objects of UNESCO, of acting as a liaison agency between UNESCO and the institutions working for the advancement of education, science and culture and of advising the Government on matters relating to UNESCO. The Commission was established in 1949. The Minister of Education is the President of the Commission which has five sub-Commissions—Education, Natural Sciences, Social Sciences, Cultural Activities and Humanities and Mass-Commission. The Education Secretary of the Government of India is the Secretary-General of the Commission.

NATIONAL ARCHIVES OF INDIA—is the only archive repository of the Government of India in which are housed important records from the early days of the East India Company. It is responsible for the preservation of records by up-to-date scientific processes. Its main functions are accession, repair and preservation of records, research and technical service, training, publication, etc. The Advisory Bodies and Committees of the National Archives are : (1) Indian Historical Records Commission ; (2) Research and Publication Committee ; (3) Advisory Committee on National Register of Records ; (4) Committee on Archival Legislation. Training is given to candidates for a one-year diploma course in Archives keeping. There is also a National Committee of Archivists.

RESEARCH AND TRAINING—The National Council of Educational Research and Training was established as an autonomous body in 1961 with the function of (1) undertaking, aiding and promoting research in all branches of education ; (2) organising advanced pre-service and in-service training and disseminating improved techniques and practices ; (3) organising extension service for institutions engaged in educational research and training of teachers and (4) developing and improving multipurpose secondary education.

The main agencies of the Council are the National Institute of Education, consisting of 9 departments, at New Delhi ; the four Regional Colleges of Education at Ajmer, Bhubaneswar, Bhopal and Mysore and Central Institute of Education at Delhi.

UNIVERSITIES AND VICE-CHANCELLORS

(with the year of establishments within brackets)

University	Vice-Chancellor
Agra University, Agra (1927) ...	B. P. Johri.
Aligarh Muslim University, Aligarh (1921)	A. M. Khusro.

University	Vice-Chancellor
Allahabad University, Allahabad (1887)	Ram Sahay.
Andhra Pradesh Agri. University, Rajendra Nagar, Hyderabad (1964)	Dr. C. Krishna Rao.
Andhra University, Waltair (1926)	M. R. Apparow
Annamalai University, Annamalainagar P.O., Tamil Nadu (1929)	Dr. S. Chandrasekhar
Assam Agricultural University, Jorhat	Dr. L. S. Negi.
Avadh University, Faizabad ...	Dr. Surender Singh.
Acharya Narendra Dev University of Agriculture & Technology, Faizabad	A. D. Pandey.
Awadhesh Pratap Singh University, Rewa (M.P.) (1968) ...	Narayan Sinh.
Banaras Hindu University Varanasi (1916)	Dr. K. L. Shrimali.
Bangalore University, Bangalore (1964)	Dr. H. Narsimhaiah.
Berhampur University, Berhampur Ganjam (1967)	B. K. Patra.
Bhagalpur University, Bhagalpur, Bihar (1960)	Vacant
Bhopal University, Bhopal ...	Dr. Ravi Prakash.
Bidhan Chandra Krishi Vishwavidyalaya, Kalyani (W.B.) ...	Dr. S. B. Chatterjee.
Bihar University, Muzaffarpur, Bihar (1952)	Dr. K. K. Mandal.
Bombay University, Bombay (1857)	T. K. Tope.
Burdwan University, Burdwan, West Bengal (1960)	Dr. Ramaranjan Mukherjee.
Bundelkhand University, Jhansi	Dr. Wahid-n-Malik.
Calcutta University, Calcutta (1857)	Dr. S. K. Mukherjee.
Calicut University, Kerala ...	Dr. N. A. Noor Mohamed.
Chandrasekhar Azad University of Agriculture & Technology, Kanpur	K. N. Kaul.
Cochin University, Cochin (1971)	Dr. N. K. Panikar.
Delhi University, Delhi (1922)	Dr. R. C. Mehrotra.
Dibrugarh University, Dibrugarh (1965)	J. N. Das.
Garhwal University, Srinagar (Garhwal)	B. D. Bhatt.

University	Vice-Chancellor
G.B. Pant University of Agriculture & Technology, Pant Nagar, Nainital	S. P. Pandey.
Gauhati University, Gauhati (1948)	Dr. H. K. Baruah.
Gorakhpur University, Gorakhpur (1957)	Dr. D. Sharma.
Gujarat Agricultural University, Ahmedabad	V. R. Mehta.
Gujarat Ayurveda University, Jamnagar (1967)	T. V. Vyas.
Gujarat University, Ahmedabad (1949)	I. J. Patel.
Guru Nanak Dev University, Amritsar	Bishan Singh Samundri.
Haryana Agricultural University Hissar	N. N. Kashyap.
Himachal Pradesh University, Simla	Dr. B. S. Jogi.
Hyderabad University, Hyderabad	Dr. Gurbaksh Singh.
Indira Kala Sangeet Vishwavidyalaya, Khairagarh, (1956) ...	G. C. Jain.
Indore University, Indore (1964)	Dr. P. G. Deo.
Jabalpur University, Jabalpur (1957)	Kanti Chaudhry.
Jadavpur University, Calcutta (1955)	Dr. Arabinda Nath Bose.
Jammu University, Jammu (1948)	J. D. Sharma.
Jawaharlal Nehru Krishi Vishwavidyalaya, Jabalpur (1964) ...	Dr. R. L. Kaushal.
Jawaharlal Nehru Technology University, Hyderabad-28 ...	Dr. M. V. Rajagopal.
Jawaharlal Nehru University, New Delhi (1969)	Dr. B. D. Nag Chaudhuri.
Jiwaji University, Gwalior (1964)	G. N. Tandon.
Jodhpur University, Jodhpur (1962)	S. C. Goyal.
Kalyani University, P. O. Kalyani, West Bengal (1960)...	Dr. P. C. Mukherjee
Kameshwar Singh Darbhanga Sanskrit University, Darbhanga (1961)	Dr. R. K. Sharma.
Kanpur University, Kanpur (1960)	Bhakt Darshan.
Karnatak University, Dharwar, Mysore (1949)	R. C. Hiremath.
Kashmir University, Srinagar ...	Razi-ul-Hassan Chishti

University	Vice-Chancellor
Kashi Vidyapith, Varanasi	Rajaram Shastri.
Kerala University, Trivandrum (1937)	R. S. Krishnan.
Kerala Agricultural University, Monnuthy, Trichur	N. Kalleswaram.
Konkan Krishi Vidyapith, Dapoli (Dist. Ratnagiri)	S. V. Chavan.
Kumaon University, Nainital	Dr. D. D. Pant.
Kurukshetra University, Kurukshetra (1956)	Dr. S. K. Dutta.
Lalit Narayan Mithila University. Kameshwarnagar, Darbhanga	Dr. M. Mishra.
Lucknow University, Lucknow (1921)	Dr. P. Dayal.
Madras University, Madras (1857)	S. Adiseshaiah.
Madurai University, Madurai, (1966)	Dr. Malcolm S. Adiseshaiah
Magadh University, Both-Gaya Bihar (1962)	S. V. Chittibabu.
Maharaja Sayajirao University of Baroda, Baroda (1949)	R. V. Singh.
Mahatma Phule Krishi Vidyapeeth, Rahuri Dist. Ahmednagar	P. J. Madan.
Marathawada Krishi Vidyapith, Parabhani	M. S. Pawar.
Marathawada University, Aurangabad (1958)	D. K. Salunkhe
Meerut University, Meerut (1966)	S. R. Kharat.
Mysore University, Mysore (1916)	B. S. Mathur.
Nagpur University, Nagpur (1923)	D. V. Urs.
North Bengal University, Raja Rammohunpur, Dist. Darjeeling (1962)	D. Y. Gohokar.
*North Eastern Hill University, Shillong	Amlan Datta.
Orissa University of Agriculture and Technology, Bhubaneswar (1962)	Dr. C. D. S. Devanasan.
Osmania University, Hyderabad (1918)	K. Kanungo.
Patna University, Patna (1917)	Dr. P. J. Mohan Reddy.
Poona University, Poona (1949)	D. N. Sharma.
Punjab Agricultural University, Ludhiana (1962)	Dr. D. A. Dabholkar.
	Dr. M. S. Randhawa.

Punjab University, Chandigarh (1947)	Dr. R. C. Paul.
Punjabi University, Patiala (1962)	Mrs. Inder Jit Kaur Sandhu
Punjabrao Krishi Vidyapeeth, Akola	N. Gopal Krishna.
Rabindra-Bharati University, Calcutta (1962)	Dr. Pratul Gupta.
Rajasthan University, Jaipur (1947)	G. C. Pande.
Rajindra Agricultural University, Pusa (Samastipur)	T. P. Singh.
Ranchi University, Ranchi (1960)	Dr. A. K. Dham.
Ravi Sankar University, Raipur, M. P. (1964)	Jagadish Chandra Dikshit. Dr. A. S. Raturi.
Rohilkhand University, Bareilly	
Rohtak University, Rohtak	M. L. Batra.
Roorke University, Roorke (1949)	Dr. Jai Krishna.
Sambalpur University, Sambalpur, Orissa (1967)	B. Behera.
Sampurnanand Sanskrit Vishwavidyalaya, Varanasi	Karunapati Tripat.
Sarder Patel University, Vallabh Vidyanagar, via Anand (1955)	R. D. Patel.
Saugar University, Saugar, M.P. (1946)	Dr. T. S. Murty.
Saurashtra University, Rajkot, Gujarat (1965)	Harsukh Bhai Sanghvi.
Shivaji University, Kolhapur (1962)	P. G. Patel.
Shrimati Nathibai Damodar Thakersey Women's University, Bombay (1951)	Dr. (Smt.) Madhuri R. Shah.
South Gujarat University, Surat (1968)	A. R. Desai.
Sri Venkateswara University, Tirupati, Andhra Pradesh (1954)	K. S. Murty.
Tamil Nadu Agricultural University, Coimbatore	Dr. G. Rangaswami.
Udaipur University, Udaipur (1962)	Dr. P. S. Lamba.
University of Agricultural Sciences, Malleswaram, Bangalore-3 (1964)	Dr. H. R. Arakeri.
Utkal University, Vani Vihar, Bhubaneswar, Orissa (1943)	Gautam Mathur.
Vikram University, Ujjin (1957)	Dr. Shiv Mangal Singh 'Suman'.
Visva-Bharati University, Santiniketan, W. Bengal (1951)	Dr. Surajit Sinha.

University	Director/Vice-Chancellor
Birla Institute of Technology & Science, Pilani (1964)	C. R. Mittra. (Dir.).
Central Institute of English & Foreign Languages, Hyderabad	Dhirubhai Manibhai Desai (V.C.).
Gujarat Vidyapith, Ahmedabad (1963)	Dr. Ramesh Mohan (Dir.).
Gurukul Kangri Vishwavidyalaya, Hardwar (1962)	G. B. K. Hooja. (V.C.)
Indian Agricultural Research Institute, New Delhi (1968) ...	Dr. A. B. Joshi (Dir.).
Indian Institute of Science, Bangalore (1958)	Satish Dhawan (Dir.).
Indian School of Mines, Dhanbad (1960)	G. S. Marwaha (Dir.).
Jamia Millia Islamia, New Delhi (1962)	Dr. M. H. Khan (V.C.)
Tata Institute of Social Sciences, Bombay (1964)	Dr. M. S. Gore (Dir.).

SCIENCE

GOVERNMENT OF INDIA'S SCIENTIFIC POLICY—The Government of India announced its scientific policy on March 4, 1958 in the following terms : (a) to foster, promote and sustain by all appropriate means, the cultivation of science and scientific research in all its aspects—pure, applied and educational; (b) to ensure an adequate supply, within the country, of research-scientists of the highest quality, and to recognise their work as an important component of the strength of the nation ; (c) to encourage and initiate, will all possible speed, programmes for the training of scientific and technical personnel on a scale adequate to fulfil the country's needs in science and education, agriculture and industry, and defence ; (d) to ensure that creative talent of men and women is encouraged and finds full scope of specific activity ; (e) to encourage individual initiative for the acquisition and dissemination of knowledge, and for the discovery of new knowledge in an atmosphere of academic freedom ; and (f) in general, to secure for the people of the country, all the benefits that can accrue from the acquisition and application of scientific knowledge.

COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH—The scientific research under the Government of India is carried on mainly through the Council of Scientific and Industrial Research, set up in 1942 as an autonomous body and the various national laboratories or research institutes aided by the Council. National laboratories have been set up under its control. Its functions are : (a) promotion, guidance and co-operation of scientific and industrial research in India ;

(b) establishment, assistance and development to special institutions or departments of existing institutions for scientific study of problems affecting the industries and trades ; (c) establishment and award of research studentship and fellowships ; (d) utilisation of the results of the researches conducted under the auspices of the Council towards the development of industries in the country ; (e) establishment, maintenance and management of laboratories, workshops and organisations, to further scientific and industrial research for the use of Indian industries ; (f) collection and spread of information in regard not only to research but also to industrial matters generally ; (g) publication of scientific papers and a journal of Industrial Research and Development.

It maintains a National Register of Scientific and Technical Personnel in the country and has also the responsibility of administering the "Post for temporary placement of well-qualified Indian scientists and technologists returning from abroad."

The Council is administered by a governing body with the Prime Minister as its President and the Education Minister as Vice-President, non-officials representing science, business and industry as well as the representatives of the Ministry of Finance. The Government Departments interested in the industrial research are also represented.

The Council is mainly financed by the Union Government. It has also income royalties and premia in processes leased out, sale of publications, fees and charges levied for consultation, testing, etc. It receives gift of land, buildings and finances from State Governments and others, and donations from businessmen.

The Council of Scientific and Industrial Research has extended its activities in various directions. The Research Co-ordination, Industrial Liaison and Extension Unit maintains suitably documented information on the progress of research in the National Laboratories and assists internal co-ordination between the National Laboratories/Institutes and the CSIR. The unit maintains external co-ordination with other research organisations, such as the Railways, Indian Council of Agricultural Research, Indian Council of Medical Research etc. A Survey and Planning of Scientific Research Unit was set up in March 1963 for the purpose of collecting data and information on proper planning of research. The Designing and Engineering Unit provides assistance to the National Laboratories in the processes developed in the laboratories from commercial point of view, designing of pilot and industrial plants based on these processes. A Defence Co-ordination Unit was set up in 1962 for co-ordinating the activities of the CSIR. Laboratories pertaining to defence problems, studying the defence requirements of imported strategic items, identifying the problems on which research and development work could be started on top priority basis. The National Register had enrolled the names of Indian scientists in India and abroad. Indian National Scientific Documentation Centre (INSDOC) was established in 1951 and is located at the National

Physical Laboratory, New Delhi. The Centre provides documentation services to National Laboratories, scientific institutions, universities and industrial concerns. It is a national repository for reports of scientific work carried out in the country, whether published or unpublished.

Besides fostering research in its own National Laboratories/Institutes etc., the CSIR provides grants-in-aid for ad-hoc research schemes in universities, technical institutions and industrial laboratories. The Council issues scientific and technical publications and gives scholarships and fellowships.

At present, 388 Senior and 1261 Junior Research Fellowships are tenable. Besides, there are 3 Senior and 4 Junior Research Fellows working in the Hindi Unit of the CSIR, set up in 1964 with the idea of developing Hindi as a vehicle for disseminating scientific knowledge and for communicating such activities of the CSIR as are directly related to the economic development of the country.

It also receives international co-operation and assistance from Rockefeller Foundation and other institutions.

National Research Development Corporation of India—The Corporation was incorporated on Dec. 31, 1953 with an authorised capital of Rs. 1 crore. The objects and functions of the Corporation are to develop and exploit in the public interests for profits or otherwise : (a) all inventions of the Council of Scientific ond Industrial Research, whether patentable or otherwise ; (b) all patents and inventions of other departments of Government of India including those of commodity research committees and other statutory research organisations including technical and engineering know-how of processes ; (c) such other patents as may be voluntarily assigned, by general or special agreements by universities, research institutions or individuals and (d) such processes and patents, the development of which may be entrusted to the Corporation.

SCIENCE TALENT RESEARCH SCHEME—The scheme is opensored by the National Council of Education Research and Training of the Ministry of Education. It was introduced in 1962-63 on experimental basis.

The scheme seeks (1) to identify boys and girls with scientific aptitude at the secondary stage ; (2) to stimulate science talent among young students by competitive process and (3) to encourage schools to take more active interest in teaching science. Under the scheme a competitive examination is held every year. Every district headquarters in the country has an examination centre. Any student in the final year of a secondary school or parallel institution is eligible for the examination, provided the student has obtained 55 per cent or more mark in science subjects (including mathematics wherever applicable) at the annual examination of the preceding class.

Every year about 350 students are slected for scholarship and about 200 more for awarding merit certificate to help them for the three-year degree course in science. A scholarship-holder is given Rs. 50/- per month for the first year and Rs. 75/- per month for the next two years of degree course besides a book allowance of Rs. 100/- every year for three years.

NATIONAL LABORATORIES & INSTITUTES—The establishment of a chain of National Laboratories ranks as one of the major achievements in India since independence. These National Laboratories seek to supplement the work of other research institutions of the country. The followings are the National Laboratories and Institutes:

National Physical Laboratory, New Delhi—conducts research on problems relating to physics, both fundamental and applied and maintains standards. Testing facilities are also available here.

National Chemical Laboratories, Poona—Its functions are fundamental and applied research, covering the whole field of chemistry.

National Metallurgical Laboratory, Jamshedpur—deals with fundamental and applied metallurgical research and maintains regional research stations.

Central Fuel Research Institute, Jealgora (Bihar)—conducts fundamental and applied research on fuels—solid, liquid and gaseous. It has set up a coal gasification plant to convert coal and coke into gas for use as demestic fuel.

Central Glass and Ceramic Research Institute, Jadavpur, Calcutta —was established in August 1950. The Institute conducts research on different aspects of glass and ceramics, pottery, porcelain, refractories and enamels; development of processes for manufacturing glass and industry.

Central Road Research Institute, New Delhi—conducts research on road materials, testing of road materials and road surfaces.

Central Food Technology Research Institute, Mysore city—for food processing and conservation of food; food engineering and all aspects of fruit technology. Regional fruit and vegetable preservation stations have been established at Trichur, Nagpur, Bombay, Simla and Lucknow.

Central Drug Research Institute, Lucknow—for all aspects of drug research including evaluation and standardisation of crude drugs, discovery of substitutes for pharmacopoeial drugs and plants, pharmaceutical and synthetic chemicals, bio-chemistry and bio-physics, infection, immunisation, pharmacology, chemotherapy and experimental medicine.

Central Leather Research Institute, Madras—for fundamental and applied aspects of leather technology. It has regional extension centres at Bombay, Calcutta, Jullundur, Kanpur and Rajkot.

Central Electro-Chemical Research Institute, Karaikudi (Tamil Nadu)—for research on different aspects of electro-chemistry, including electro-metallurgy, electro-deposition and allied problems.

Central Building Research Institute, Roorkee (U.P.)—for engineering and structural aspects of building and human comforts in relation to buildings.

Central salt and Marine Chemicals Research Institute, Bhavnagar—carries on investigation on production of pure salts, reduction in cost of production, economic utilization of by-products of salt manufacture, development of new methods and techniques for the recovery, production and utilization of marine and allied chemicals.

Central Electronics Engineering Research Institute, Pilani (Rajasthan)—for the design and construction of electronic equipment and components and test equipment.

National Botanical Gardens, Lucknow—for the collection and large scale cultivation of economic and medicinal plants of industrial importance.

Central Mining Research Station, Dhanbad—Research in methods of mining, safety in mines and mine machinery.

Regional Research Laboratory, Hyderabad—Research on problems relating to the industries and raw materials of the area.

Indian Institute of Experimental Medicine, Calcutta—Research on various aspects of bio-chemistry as applied to medicine, bacteriology, etc.

Birla Industrial and Technological Museum, Calcutta—is a museum to depict scientific and technological advancement.

Regional Research Laboratory, Jammu-Tawai (Jammu & Kashmir)—Research on problems relating to the industries and raw materials of the area and research specially directed to medicinal plants of the Himalayas (Kashmir region).

Central Mechanical Engineering Research Institute, Durgapur (West Bengal)—Research in mechanical engineering in all its aspects.

Central Public Health Engineering Research Institute, Nagpur—research on all aspects of public health engineering and co-ordination of work of all interested agencies in this field in the country.

National Aeronautical Laboratory, Bangalore—Scientific investigation of the problems of flight with a view to their practical application to the design, construction and operation of aircraft in India.

Regional Research Laboratory, Jorhat (Assam)—Research on problems relating to more efficient utilization and better conservation of important national resources of Assam and other regional needs posing special problems.

Industrial Toxicological Research Centre, Lucknow—studies harmful effects of industrial toxins on skin, blood, gastro-intestinal tract, central nervous system, bones, etc.

Central Indian Medicinal Plants Organisation. Lucknow—Co-ordination of activities the development of cultivation and utilization of medicinal plants on organised basis.

Central Scientific Instruments Organisation, Chandigarh—Promotion and development of indigenous manufacture of scientific instruments for teaching, research and industry.

Indian Institute of Petroleum, Dehra Dun—Research in petroleum refining and processing of natural gas, petro-chemicals, etc. and providing facilities for the training of personnel for petroleum industry.

National Geophysical Research Institute, Hyderabad—Correlation of the field data in all fundamental aspects of geology and geophysics.

Visvesvaraiya Industrial & Technological Museum, Bangalore—is a museum to depict scientific and technological advancement.

National Institute of Oceanography, New Delhi—Research on various aspects of physical, geological, biological and chemical oceanography and prospecting petroleum and minerals in sea-bed.

Mafatlal Scientific and Technological Museum, Bombay—is a museum to depict scientific and technological advancement.

Regional Research Laboratory, Bhubaneswar (Orissa)—Research on problems relating to the industries and raw materials of the region.

National Biological Laboratory, Palambur (Kangra)—Both fundamental and applied research on modern aspects of biological sciences.

Indian National Scientific Documentation Centre, New Delhi- provides full range of documentation services.

Structural Engineering Research Centre, Roorkee (U.P.)—conducts research in specialized design and development work in structural problems concerning buildings, bridges and other structures.

Liaison Units—have been set up in most of the laboratories to maintain contact with the industry, industrial and trade associations, Government departments and other users of research. A Research Co-ordination, Industrial Liaison and Extension Services unit is maintained at New Delhi.

VIGYAN MANDIRS—The object of this scheme is to make the village people familiar with the scientific principles involved in their day-to-day problems of agriculture, crop-protection, village sanitation, etc. Each Vigyan Mandir has a small museum and a laboratory for conducting simple analyses of soil, water and food. So far 52 Vigyan Mandirs have been set up generally at sites covered by community development projects. Since April 1963, administrative control of these has been transferred to State Governments and Union Territories.

DEPARTMENTAL RESEARCH ACTIVITIES—There are eleven Hydraulic Stations under the Central Board of Irrigation and Power-The Central Water, Power and Irrigation Research Centre, Khadakvasla, near Poona, is the pioneer hydraulic research station in India.

Botanical Survey of India, Calcutta—It functions to explore the plant resources of the country by systematic surveys. Systematic survey of the floras of the country in under-explored and unexplored areas are undertaken by this organisation. It also undertakes to reprint flora and other publications. The Botanical Survey of India has now under it the following organisations : (1) Office of the Chief Botanist, Calcutta; (2) Central National Herbarium, Botanical Garden, near Calcutta; (3) Botanical Galleries in Indian Meseum, Calcutta; (4) Industrial Section of the Indian Museum, Calcutta; (5) Central Botanical Laboratory, Allahabad; (6) 5 regional circles, with head-quarters at Dehra Dun, Coimbatore, Poona, Allahabad and Shillong.

The Botanical Garden founded in 1788 at Shibpur, near Calcutta, has been taken up by the Government of India.

Zoological Survey of India, Calcutta—was started in 1916. It conducts research in systematic zoology, animal ecology, geography and famistic surveys. 7 regional stations have been established at Shillong, Poona, Jabalpur, Jodhpur, Madras, Patna nad Dehra Dun.

Geological Survey of India, Calcutta—was established more than hundred years ago and is responsible for the preparation of the geological map of India. The field work of the Survey is conducted through eight regional circles.

Anthropological Survey of India, Calcutta—India is one of the earliest countries in the world to start anthropological survey in 1905. But the work prematurely closed down. A Deparment of Anthropology was started in Calcutta University in 1921. In 1945, a nucleus of the Anthropological Department was established by the Government of India. It is responsible for conducting anthropological surveys including social, psychological, economic, linguistic, physical, genetic and instructional investigations.

Survey of India—with its headquarters at Dehra Dun, carries out topographical surveys and prepares up-to-date maps. The officers of the Department are trained at the Survey Training School at Dehra Dun. The work of the Survey is carried on by 4 circles—Northern, Western, Eastern and Southern.

National Atlas Organisation—is entrusted with compiling drawing, probing and printing of maps.

RESEARCH INSTITUTES—(a) Forest Research Institute at Dehra Dun carries on research in the utilisation of timber for constructional purposes. (b) All India Radio maintains a research unit n New Delhi to investigate problems relating to propagation and reception or radio waves and the design and performance of radio receivers. (c) Railway Board has established a research centre at Lucknow with sub-stations at Lonvala and Chittaranjan to investigate problems referred to them by railway workshops and the Central Standards Office (Railways). (d) Roads Organisation under the Ministry of Transport deals with the problems of road development and road materials, highways and bridge engineering, ports, and harbours, etc. (e) Indian Ssandards Institution under the Ministry of Industrial Development lays down standard specifications for materials, products, practices, etc. and promotes quality control. It issues licences to manufacturers for providing third-party guarantee about quality of products.

OTHER RESEARCHES

Atomic Energy and Outer Space Research—See Index.

Engineering Research—With a view to initiating and co-ordinating research on different engineering subjects, the Board of Engineering Research was inaugurated in 1950. The Board is assisted by 5 expert committees : (1) Civil Engineering Committee ; (2) Mechanical Engineering Committee ; (3) Electrical and Radio Engineering committee ; (4) Hydraulics committee ; (5) Aeronautical Engineering committee.

Medical Research—Medical research is conducted chiefly under the auspices of the Indian Council of Medical Research founded in 1912 at New Delhi. It maintains the Nutrition Research Laboratory at Hyderabad, the Tuberculosis Chemotherapy Centre at Madras, the Virus Research Centre at Poona, Cholera Research Centre at Calcutta, the Polio Research Unit and the Blood group Reference Centre at Bombay. It provides grants-in-aid, disseminates information on medical research and publishes Journals. The country has number of sepecialised institutions, such as—(1) National Malaria Institute, Delhi ; (2) All India Institute of Hygiene and Public Health, Calcutta ; (3) School of Tropical Medicine, Calcutta ; (4) Patel Chest Institute, Delhi ; (5) Central Leprosy Research Institute, Madras ; (6) Haffkine Institute, Bombay ; (7) Indian Cancer Research Centre, Bombay ; (8) Central Research Institute, Kasauli (Punjab) ; (9) Pasteur Institute, Coonoor ; (10) Central Drugs Laboratory, Calcutta ; (11) King Institute of preventive Medicine, Guindu, Tamil Nadu ; (12) All-India Institute of Medical Science, New Delhi, etc. There are also privately conducted research institutes like Bengal Immunity Research Institute, Calcutta, etc. (see also Public Health section).

Agricultural Research—It had its beginning in 1929 with the starting of Indian Council of Agricultural Research. The Primary function of the Council is to promote, guide and co-ordinate agriculture and animal husbandry education and research and its application through the institutions belonging to Central and State Governments, the universities and other institutions.

The following are the main Agricultural Institutes of India : (1) Forest Research Institute, Dehra Dun ; (2) Indian Agricultural Research Institute, New Delhi ; (3) Indian Veterinary Research Institutes, Mukteswar and Izatnagar (U.P.) ; (4) National Dairy Research Institute, Karnal (Haryana) ; (5) Sugar Research Institute, Cuttack ; (7) Cotton Technological Research Laboratory, Matunga, Bombay and its sub-station at Indore (M.P.) ; (8) Central Jute Technological Research Laboratory, Calcutta ; (9) Jute Agricultural Research Institute, Hooghly (W.B.) : (10) Indian Lac Research Institute, Ranchi ; (11) Central Tobacco Research Institute, Rajamundry (A.P.). ; (12) Bidi Tobacco Research Station, Anand ; (13) Central Inland Fisheries Research Station, Barrackpore (W.B.) ; (14) Central Marine Fisheries Research Station, Mandapam Camp (Madras) ; (15) Deep-sea Fishing Research Station, Bombay ; (16) Central Coconut Research Station, Kavamkulam, Quilon (Kerala) ; (17) Central Potato Research Institute, Simla ; (18) Central Vegetable Breeding Station, Kulu (Himachal Pradesh) ; (19) Fruit Research Institute, Sabour, Bhagalpur (Bihar) ; (20) Sugarcane Research Station, Poona ; (21) Sugarcane Research Station, Shaharanpur (U.P.) ; (22) Central Fisheries Technological Stations, Cochin and Ernakulam (Kerala) (See also Agriculture section).

Other Research and Technical Institutions—Most of these are private research institutions financed by private endowments and Government's assistance :

Andhra Pradesh : 1. Nutrition Research Laboratories, Hyderabad.

Assam : Tocklai Experimental Station (Indian Tea Association), Cinnamara.

Gujarat : 1. Ahmedabad Textile Industry's Research Association, Ahmedabad ; 2. Central Salt & Marine Chemical Research Institute, Bhavnagar ; 3. K.M. School of Post-Graduate Medicine & Research, Ahmedabad ; 4. Physical Research Laboratory, Ahmedabad.

Haryana : 1. National Dairy Research Institute, Karnal.

Karanataka : 1. National Dairy Research Institute, Adugodi Post, Bangalore ; 2. Indian Institute of Science, Bangalore.

Maharshtra : 1. Armed Forces Medical College, Poona ; 2. Haffkine Institute, Bombay ; 3. Indian Cancer Research Centre, Bombay ; 4. Maharashtra Association for the Cultivation of Science, Poona, 5. Taraporevala Marine Biological Station, Bombay ; 6. Tata Memorial Hospital, Bombay.

Tamil Nadu : 1. Astro-Physical Observatories (Indian Meteorological Department), Kodaikanal ; 2. Central Electro-Chemical Research Institute, Alagappa College, Karaikudi ; 3. Central Leather Research Institute, Madras ; 4. Central Marine Fisheries Research Station, Mandapam Camp ; 5. Sugarcane Breeding Institute, Coimbatore.

Rajasthan Camp : Central Electronic Engg. Research Institute, Pilani.

Uttar Pradesh : 1. Birbal Sahni Institute of Palaeo-Botany, Lucknow ; 2. Central Building Research Institute, Roorkee ; 3. Central Drug Research Institute Lucknow ; 4. Forest Research Institute, Dehra Dun ; 5. Harcourt Butler Technological Institute, Kanpur ; 6. Indian Institute of Sugarcane Research, Lucknow ; 7. Indian Veterinary Research Institutes, Izatnagar and Mukteshwar ; 8. National Sugar Institute, Kanpur ; 9. Sheila Dhar Institute of Soil Science, Allahabad University, Allahabad.

West Bengal : 1. All-India Institute of Hygiene & Public Health, Calcutta ; 2. Bengal Immunity Research Institute, Calcutta ; 3. Bose Institute, Calcutta ; 4. Central Drugs Laboratory, Calcutta ; 5. Central Inland Fisheries Research Institute, Barrackpore, 24 Paraganas ; 6. Indian Association for the Cultivation of Science, Calcutta ; 7.

Indian Institution of Technology, Kharagpur ; 8. Indian Statistical Institute, Calcutta ; 9. Institute of Post-Graduate Medical Education and Research, Calcutta.

Delhi : 1. All-India Insitute of Medical Sciences, Safdarjang, New Delhi ; 2. Indian Agricultural Research Institute, New Delhi ; 3. Institute of Agricutural Research Statistics, Library Avenue, New Delhi ; 4. National Physical Laboratory, Hillside Road, New Delhi ; 5. School of Planning Architecture, New Dehli ; 6. Shri Ram Institute for Industrial Research, Delhi ; 7. Institute of Research in Himalayan Geology, University of Delhi.

Himachal Pradesh : 1. Central Research Institute, Kasauli.

CULTURAL AFFAIRS

THE NATIONAL AKADEMIES

SAHITYA AKADEMI—or the National Academy of Letters was set up by the Government of India on 12th March, 1954. The Government of India Resolution set forth the constitution of the Akademi as "a national organisation to work actively for the development of Indian letters and to set high literary standards to foster and co-ordinate literary activities in all the Indian languages and to promote through them all the cultural unity of the country". The Akademi functions as an autonomous organisation. It is wholly financed by the Union Government.

The general policy of the Sahitya Akademi and the basic principle of its programme are laid down by the Central Council and are implemented under the direct supervision of the Executive Board. There is an Advisory Board for each language. There are, besides, special Editorial of Advisory Board for specific projects. The tenure of the General Council is five years. The Akademi maintains two regional offices in Calcutta and Madras.

Besides the fifteen languages of the Constitution of India, the Sahitya Akademi has recognised English a language in which its programme or part thereof may be implemented.

The Akademi also marks annual awards of Rs. 5,000/- each to author of outstanding books in Indian languages and in English (see Index).

Address : Rabindra Bhavan, Feroze Shah Road, New Delhi-1.

SANGEET NATAK AKADEMI—The Akademi is an autonomous body set up by the Government of India in 1953. The chief objective of the Akademi is to foster and develop music, dance and drama. The Akademi gives grants to various performing arts organisations, promote research, sets up training institutions, organises seminar, festivals and subsidies the publications on music, dance and drama. The Akademi also gives Awards annually to the eminent artistes in the fields of music, dance and drama.

Organisational Set-up—The Akademi functions through a General Council, an Executive Board, a Finance Committee and other special Committees which the Executive Board may appoint.

Programme—The Akademi has comprehensive programmes of documentation of the folk performing arts through films, tapes and photographs. It has built up a library of tape music both classical and folk. It maintains a museum of musical instruments and a sound-recording studio. It sponsors rare forms and specialised artistes in music, dance and drama.

It runs National School of Drama with a 3-year broad-based training course in dramatics. It also runs an institute, Jawaharlal Nehru Manipur Dance Academy, for the training in Manipur dance at Imphal and another institute, Kathak Kendra, for training in Kathak dance in Delhi.

Address : Rabindra Bhavan, Feroz Shah Road, New Delhi-1.

LALIT KALA AKADEMI—was set up on August 5, 1954. The primary object of the Akademi is to encourage and promote study and research in the fields of painting, sculpture, architecture and other graphic arts. It is wholly financed by the Union Government.

The Akademi is a semi-autonomous body financed by the Government of India and with a large General Council. Its two main functions are National and International Exhibitions and publications about ancient and modern Indian art. It renders assistance to other art organisations and also organises activities, such as Seminars, copying of Murals, Artists' Camps, etc.

The Akademi's activities fall under several heads, namely. National Exhibition of Art every year, exhibitions from abroad, Indian art exhibitions abroad, survey of folk arts and crafts, copying of frescos, publications programme, recognition of and aid to art organisations etc.

It runs an Artists' Aid Fund built up gradually with the contributions made by the Artists.

The Akademi makes annual awards to outstanding artists participating in the National Exhibition of Art and honours its fellows with Tamrapatra (a copper plate), Angavastra (silk brocade) and Rs. 5,000 as a token of respect (see Index).

Address : Rabindra Bhavan, Feroz Shah Road, New Delhi-1.

NATIONAL BOOK TRUST—was set up in 1957 to encourage the production of good literature and to make such works available at moderate prices to libraries, educational institutions and the public.

CHILDREN'S BOOK TRUST—was formed a few years ago by the Government of India with the object of publishing children's literature in English, Hindi and regional languages. The Trust has already established a printing press for the production of books, etc.

CULTURAL RELATION

Promotion of Inter-State Cultural Understanding—(1) Under the Inter-State Exchange of Cultural Troups, troups are sent to other States. (2) Exchange of Eminent Artists Troups is being organised to promote understanding of the music and dance forms of the different regions of India. (3) Promotion of Drama Movement in the country by way of assistance to theatres for the production of new plays, study travel grants to theatre groups, professional training to qualified students who take to drama, maintenance grants to theatre groups, (4) Open-air theatres are being established in rural areas (5) Theatre groups registered under Registration of Societies Act, 1960 and which have produced at least three separate dramas during previous five years, are provided grants under a scheme launched in 1960-61 to encourage the theatre in the country. Another scheme is in operation to offer assistance to professional theatres by way of meeting the deficit of the theatre groups on a matching basis by the Government of India and the State Government. Registered cultural organisations are provided with grants for building purposes. Financial assistance is given to cultural societies to implement their programmes.

Cultural Relations with other countries—An External Relations Division has been established to promote better understanding and goodwill by means of exchange of delegations of artists, students, scholars, publications, exhibitions and art objects with other countries, as also through presentations of books, selection of Indian teachers for scientific training abroad, construction of chairs of Indology abroad and assistance for the publication of Indian classics in foreign languages and vice versa.

Exhibitions of Indian art and culture are organised abroad.

Cultural agreements have been entered into with various foreign countries. At the moment India has cultural agreements with 17 countries.

Financial assistance in the form of ad-hoc grants is given to societies and institutions in India and abroad.

Financial assistance has been given for the construction of International Students' Houses at Delhi and Santiniketan, Y.M.C.A., Indian Students Union and Hostel, London, Crosby Hall, London, New Hall, Cambridge.

Indian Council for Cultural Relations—was established in November 1949 with the object of establishing, reviving and strengthening cultural relations between India and other countries. Under Cultural Exchange Programme, the Council receives a variety of visitors, plays hosts to several delegations, awards travel grants and organises exhibitions and lectures. The Council publishes two quaterly journals, viz., Indo-Asian Culture and Thaquafat-ul-Hindi.

ARCHAEOLOGICAL SURVEY OF INDIA—The main activities of this Survey are conservation of ancient monuments, explorations and excavations, examinations of epigraphical records, acquisition and preservation of cultural collections in various museums, dissemination of information about Indian culture through a programme of publication (see Index).

MUSEUM AND ART COLLECTIONS—There are some important museums in India. The Government of India had set up in 1956 the Central Advisory Board of Museums to advise the Government on matters relating to museums. The Scheme, Reorganisation and Development of Museums is a continuing scheme. On its recommendations a scheme for the award of fellowships in Museology has been instituted to promote research work in museums. To begin with 3 fellowships of Rs. 250 p.m. have been awarded. The National Museum at New Delhi was opened on 1959 in its permanent home at New Delhi. The Art Purchase Committee for the Central Museum, viz., the National Museum, New Delhi, the Indian Museum, Calcutta and the Salar Jung Museum, Hyderabad was formed during 1963-64. There is an Indian War Memorial Museum at Red Fort, Delhi, set up in 1919, which is responsible for the preservation and maintenance of First World War exhibits kept therein. The Indian Museum at Calcutta is the premier museum of the country. It is managed by a Board of Trustees and consists of six sections namely, Art, Archaeology, Anthropology, Industrial (Economy), Zoology, Gealogy. The Victoria Memorial Hall in Calcutta is also an historical museum. It accommodates exhibits mainly connected with the British period of Indian history and is managed by a Board of Trustees. The National Gallery of Modern Art was started at Jaipur House, New Delhi in 1953 for the preservation of famous art collections of India. The function of the Gallery is to exhibit Indian pictorial and sculptural art from 1857. An Act to declare the Salar Jung Museum with Salar Jung Library at Hyderabad in Andhra Pradesh to be an institution of national importance and to provide for its administration, was passed in 1961 by Parliament. The Nehru Memorial Museum and Library was inaugurated on Nov. 14, 1964 in New Delhi. Dr. Zakir Hussain Memorial Museum at Delhi and Gandhi Darshan at Delhi are also administered by the Union.

LIBRARIES—The following libraries are under the control of the Central Government : (1) National Library, Calcutta, regarded as the premier library of India, (2) Central Reference Library, Calcutta, which publishes annual volume of bibliography, (3) Khuda Baksh Oriental Public Library, Patna, (4) Central Library, Bombay, (5) Delhi Public Library, (6) Central Secretariat Library, Delhi, (7) Central Library. Madras, (8) Raza Library, Rampur. A *Textbook Reference Library* was set up in New Delhi in July 1972.

Atomic Energy

India on 18 May, 1974 entered for the first time the nuclear club by successfully exploding an underground plutonium nuclear device. The plutonium device used was designed to yield about 12 kilotons of TNT explosive energy. It exploded at 8.5 a.m. on the above day somewhere in Rajasthan desert. It was carried out at a depth of 100 metres and it released no significant radioactivity above normal background.

The first Indian satellite, Aryabhata, went into orbit around the earth after it had been launched successfully by a Soviet Intercosmos rocket on April 19, 1975. Named after the Fifth Century astronomer and mathematician, the 360-kg satellite was launched from a Soviet cosmodrome into a nearly circular earth orbit, with an apogee of 623 km, perigee of 564 km and a 50.4° inclination. It orbits the earth once in 96.41 minutes.

It will carry out three scientific experiments, designed and instrumented by Indian scientists, and will transmit the results to two earth stations, set up by ISRO and manned by Indian scientists, one each at Bears Lake, near Moscow, and Sriharikota in Andhra Pradesh.

The satellite is expected to stay in orbit for nearly two years and a half but its useful life is likely to be limited to six months by its supply of compressed nitrogen which will impart it the spin required to keep it from tumbling in space.

The entire design, fabrication and testing of the satellite and all its sub-systems and the ground facilities for tracking and tele-command systems, both at Sriharikota and Moscow, have been the work of ISRO scientists.

Under a collaboration agreement with the Soviet Academy of Sciences signed on May 10, 1972, the Russians have supplied the "panels" of solar silicon cells and nickelcadmium batteries on which the satellite's instruments and radio receivers and transmitters work on command from the ground stations.

The six compressed nitrogen bottles for the spin jets and tape-recorders for the storage of data for 40 minutes, until it is called for on command, also have been supplied by the Russians.

The three experiments the satellite will carry out will be on X-ray astronomy, solar physics and aeronomy.

For the first time, designed by an ISSP group, headed by Dr. K. Kasturirangam, the satellite carries magnetometres, a sodium iodide scintillator telescope perpendicular to the spin axil and a gas proportional counter telescope along the axis.

An 11 c.m.-calcium iodide thalium activator scintillator is on board for the solar physics experiment to be conducted by Prof. R. R. Daniel and his team at the Tata Institute of Fundamental Research.

An election trap and an ultraviolet ray detector have been installed for the aeronomy experiments designed by Dr. Satya Prakash and his team at the Physical Research Laboratory at Ahmedabad.

The primary objective of the Indian Scientific Satellite Project, besides experiments in space, is to build up satellite technology.

HISTORY OF ATOMIC ENERGY IN INDIA—Atomic energy in India is the exclusive subject of the Central Government. Although an Atomic Energy Act was passed as early in 1948, it was only in Aug. 1954 that the Central Government launched a full-fledged atomic energy programme. The *Indian Atomic Energy Commission* was set up on Aug. 10, 1948, with Late Dr. H. J. Bhabha as its Chairman. It is responsible for the application of atomic energy in India for peaceful purposes.

The *Department of Atomic Energy* at the Centre carried on the programme for the use and development of atomic energy in India. It was set up on Aug. 3, 1954.

NUCLEAR RESEARCH—The Atomic Energy Commission is responsible for formulating and implementing policies regarding atomic energy. The scientific and technical work of the commission is carried on by the *Bhabha Atomic Research Centre (B.A.R.C.)*, Trombay and the *Atomic Minerals Division*. The national centre for research in and development of atomic energy is the *B.A.R.C.* which was set up as the Atomic Energy Establishment in 1957 and renamed in 1967. It is organised under following groups, viz., physics, chemical, electronics and instrumentation, reactor, engineering services, engineering, metallurgy, analysis, reactor operations and maintenance, isotope, bio-medical and administrative. These groups are further sub-divided into 25 divisions. There is also a Directorate of Radiation Protection.

Gauribidanur Seismic Station near Bangalore was set up in 1965 in collaboration with the U.K. Atomic Energy Authority. It has a full array of 20 sensors. It helps in detecting and identifying underground nuclear explosions and facilities research in seismology.

PROGRESS OF ATOMIC ENERGY—Since the establishment of the Department of Atomic Energy, research and development in the peaceful uses of atomic energy has made rapid strides.

India's first nuclear research reactor is the 1-mw *Apsara*, designed and built entirely by Indian personnel. It is a one-mw swimming pool-type reactor and was put into operation on Aug. 4, 1956.

The second research reactor is the 40-mw *Canada-India Reactor (CIRUS)*, set up with Canadian assistance. It went into operation on July 10, 1960. It is one of the largest isotope producers in the world and has special facilities for the in-pile testing of engineering loops for future power reactors.

The third research reactor is the *zerlina,* designed, engineered and built entirely by Indian personnel. It is a zero energy thermal reactor (100 watts) and was commissioned on Jan. 14, 1961. It is a flexible facility and has proved to be very valuable in the study of the properties of various types of nuclear fuels and in the geometry and physics of reactor cores.

The fourth research reactor is *Purnima*, a zero energy fast reactor.

An experimental fast breeder test reactor is being set up at Kalpakkam in Tamil Nadu. A *Nuclear Fuel Complex* has been established at Hyderabad to meet the fuel requirements of power reactors.

ATOMIC FUEL—A *Uranium Metal Plant* at Trombay was commissioned around the middle of Dec. 1958, for producing reactor grade uranium metal, and the first nuclear pure ingot of uranium metal was produced on Jan. 30, 1959, from uranium fluoride obtained from the Thorium Plant at Trombay. The *Thorium plant* was set up in 1955 for processing thorium cake obtained from monazite sands on the Kerala beach.

A *Fuel Element Fabrication Facility,* established in 1959, makes fuel rods for reactors. Fabrication of fuel elements for reactors is a highly skilled and complex job. This is borne out by the fact that in the world today, there are only about half-a-dozen countries making their own fuel elements. On the basis of development work carried out at Trombay, the preliminary flow-sheet for the plant was finalised in Nov. 1957 ; and it was completed in less than 20 months after this, *engineered,* and *built entirely by Indian metallurgists and engineers.* The first prototype fuel element CIRCUS was produced on June 15, 1959 ; and the first lot of ten fuel elements was ready on Feb. 15, 1960. Indian fuel elements have some of the finest grained uranium metal in the world.

A small pilot plant is also in operation at Trombay for obtaining thorium metal by reducing thorium oxide with calcium.

The *Nuclear Fuel Complex* at Hyderabad has been planned to make the country self-sufficient in nuclear fuel and zircaloy structural materials required for the nuclear power programmes.

Power Reactor Fuel Reprocessing Plant at Tarapur is being set up by the B.A.R.C. This plant will process the irradiated fuel from Tarapur and other atomic power stations under construction.

Heavy Water (D_2O) *Plants* are stationed at Nangal (Punjab), Kota (Rana Pratap Sagar, Rajasthan), Baroda, Tuticorin and Talcher. At present Heavy Water is being produced at the Nangal Plant. The plant has an annual capacity of 14 tonnes. The setting up of other plants has been sanctioned. Kota plant will have a capacity of 100 tonnes of heavy water per year, the Baroda plant 67.2 tonnes, Tuticorin plant 71.3 tonnes and Talcher plant 62.7 tonnes a year.

PLUTONIUM PLANT—A far-reaching development in the country's nuclear march was the commissioning in 1965, of a *Fuel Element Reprocessing Plant* (*Plutonium Plant*) at Trombay for processing irradicated uranium rods to extract plutonium 239 and other fissionable materials. Plutonium 239 is an extremely valuable fissile material and atomic fuel for future reactors. It is of great importance in the long-term power programme of the country, as plutonium reactors can be used to breed uranium 233, also a fissile material, by bombarding thorium, which by itself is non-fiscsile, with neutrons.

The *Electronics Corporation of India Ltd.*, set up at Hyderabad in April 1967, with an authorised capital of Rs. 10 crores, will produce a variety of sophisticated electronic equipment and components including transistors, etc., nuclear instruments for medical, agricultural, industrial and research purposes, instrumentation and controls for nuclear power stations and computers.

Two new laboratories have been set-up ; (1) an *Electronics Prototype Engineering Laboratory* to undertake production engineering of the electronic and allied equipment designed and developed in various laboratories and (2) a *Reliability Evaluation Laboratory* to test, measure and evaluate reliability of electronic component, instruments and systems.

RADIO-ISOTOPES—Radio-isotopes and radio sources are perhaps the most versatile tools of the Atomic Age. One of the tasks of the Department of Atomic Energy has been to make these tools available to workers all over the country. An *Isotope Division* was set up at Trombay in April 1957. The production of radio-isotopes and labelled compounds at Trombay has steadily increased over the years. Today more than 350 different types of radio-active products, including many special preparations, are readily available for users.

A *Radiation Medicine Centre* was set up in Bombay in 1963 to promote the use of radio-isotopes in the diagnosis and treatment of diseases.

INDUSTRIAL ACTIVITIES—The Department of Atomic Energy also carries out industrial operations. The industrial undertakings of the Department include India Rare Earths Ltd., the Electronics Corporation of India Ltd., and the Uranium Corporation of India Ltd.

The *Power Project Engineering Division* undertakes the design, construction and commissioning of nuclear power plants.

MINERAL PROSPECTING—The *Atomic Minerals Division* under the Department of Atomic Energy conducts surveying, prospecting and mining of atomic minerals the most important of which is uranium but which also include thorium, beryllium, zirconium, lithium, titaniun etc. It has located and is now mining uranium deposits at Jaduguda near Jamshedpur. It has also discovered large deposits of monazite on the Ranchi plateau in Bihar, larger than the deposits on the Kerala coast, till then the largest in the world.

The monazite beach sands of Kerala and Tamil Nadu are being worked by the *Indian Rare Earths Ltd.* at its plants at Alwaye (Kerala) and Manavalakurichi (Tamil Nadu). The rare earths salts are used in the manufacture of carbon covers for lamps, polishing powder for mirrors and for special optical lenses. The rare earths metals are used in the form of mica in metallurgy and in the preparation of alloys and flints. The Thorium Plant at Trombay is operated by Indian Rare Earths Ltd. on behalf of the department of Atomic Energy.

Separation of rare earths chloride from monazite at the Alwaye Plant in Kerala leaves a residual cake containing thorium and uranium. In April 1953, work was started at Trombay on a plant to process this residue to obtain thorium nitrate and uranium fluoride. Thorium nitrate is widely used in the gas mantle industry, and the plant at Trombay has been meeting the demands of this industry not only in India but also in other countries.

Uranium Corporation of India Ltd. at Jaduguda in Bihar, is responsible for the development of the uranium mine and the operation of the uranium mill at Jaduguda. The public sector undertaking, set up with an authorised capital of Rs. 15 crores, took over the management of the Uranium Mine and Mill in October 1967.

Zircon allanite, from which zirconium can be extracted, has been discovered in Andhra and Tamil Nadu States. Hafnium is associated with zirconium in some of the deposits. The mineral fergusonite, source of Yttrium, has been located in Madurai area, Tamil Nadu. In Udaipur, Rajasthan, extensive deposits of raniferrous ore have been found. India is one of the world's largest producers of mineral beryl, from which beryllium can be extracted. Beryllium oxide, obtainable from the metal, is an important material used as a reactor moderator.

ATOMIC POWER STATIONS—India's first atomic power station, built at Tarapur in Maharashtra, with an installed capacity of 400 mw, supplies from two units of 200 mw. each, was commissined in October 1969. After allowing for internal consumption, the supply of power to the grid is 380 mw. The grid system of Gujarat and Maharashtra will be interlinked through a switchyard erected adjacent to the station. This station, apart from producing electrical power, will also play another important role of producing plutonium, a valuable atomic fuel. The Tarapur project is based on the use of enriched uranium which would have to be imported from the U.S.A.

The second atomic power station with a generating capacity of 400 mw. is under construction at Rana Pratap Sagar in Rajasthan. This station will be of the CANDU-type, using natural uranium as fuel and heavy water as moderator and coolant.

The third atomic power station is located at Kalpakkam, near Mahabalipuram in Tamil Nadu. This project is being engineered and built entirely by Indian personnel and will also be of the CANDU-type. It will consist of 2 units each with a 235 mw of installed capacity, and 215 mw of sent out capacity.

The fourth atomic power station will be set up at Narora in Western Uttar Pradesh. Initially it will comprise reaction of 200/235 mw and will feed power into the northern grid. Based on natural uranium it will produce 470 mw of nuclear power and will cost Rs. 140 crores. It will be ready by 1979.

TRAINING—A Training School was started in 1957 with the object of meeting the growing requirements for suitable scientific personnel for India's atomic energy programme. It selects university graduates in science and engineering, annually on an all-India basis, and gives them specialised training for one year in the various disciplines of nuclear science. Upon successful completion of their training, they are absorbed by BARC and other organisations and projects under the Department of Atomic Energy.

RESEARCH AND FINANCIAL ASSISTANCE—A *Reactor Research Centre* is being set up at Kalpakkam near the Madras Atomic Power Station. It will be a centre for studies in fast breeder reactor technology. It will also have a Pulsed Fast Reactor. To promote research in nuclear science, subventions are granted to various universities, laboratories asd research institutions. The *Tata Institute of*

Fundamental Research, Bombay, is the national centre for advanced study and fundamental research in nuclear science and mathematics. Other institutions receiving support from the Atomic Energy Department, are the *Saha Institute of Nuclear Physics,* Calcutta, and the *Physical Research Laboratory,* Ahmedabad, which conducts investigations on cosmic rays and associated astrophysics, aeronomy, theoretical physics, space physics and radio-astronomy. A *High Altitude Research Laboratory* has been set up at Gulmarg in Kashmir in 1963 at an altitute of 9,000 ft. for high-altitude work in cosmic rays, biology, physiology and other subjects. A similar laboratory is also to be established at Kodaikanal in Tamil Nadu. In 1967, the two organizations, viz., the *Tata Memorial Centre* and the *Indian Cancer Research Centre* were amalgamated into one body called the *Tata Memorial Centre,* under a Council. The aims of the Centre are to conduct intensive research directed towards the advancement of knowledge in the field of cancer, combat cancer in all its forms by care and study of patients and to provide education and training to physicians and investigators in special fields. *Variable Energy Cyclotron,* Calcutta is being set up which will be a national facility for advanced work in nuclear physics and for the controlled direct irradiation of biological and agricultural products.

The 530-metre long cylindrical radio telescope at Ootacamund for studies in radio astronomy has been completed.

The *Space Science and Technology Centre* which was set up on March 30, 1966 at Thumba is engaged in indigenous development of sounding rockets and satellite launching vehicles, control and guidance systems, on-board and ground electronics, etc. to support rocket and satellite missions.

A *Reactor Research Centre* is being set up at Kalpakkam in Tamil Nadu adjacent to the Madras Power Station.

The *Radiation Medicine Centre* of BARC continues to be a Regional Reference Centre of WHO, in collaboration with the international Atomic Energy Agency, for SE Asia in the area of nuclear medicine.

INTERNATIONAL RELATIONS—India has been renominated as a member to the Board of Governors of the U.N. International Atomic Energy Agency as being the most advanced country in atomic energy development in South Asia. The I.A.E.A., which came into being on July 29, 1957 is a specialised agency of the U.N., to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world.

SPACE RESEARCH IN INDIA—India formally entered the field of space research with setting up of an *Indian National Committee for Space Research* by the Department of Atomic Energy on Feb. 16, 1962, to aid and advise the Department in the formulation and execution of policies on the peaceful uses of outer space. The INCOSPAR has since been taken away from the Department and entrusted to the Natonal Institute of Sciences, New Delhi and, since 15th August, 1969, the programme of space research is being managed by the Indian Space Research Organization.

An *Equatorial Rocket Launching Station*, set up at Thumba, near Trivandrum has been in operation since 1963. On Feb. 2, 1968, it was dedicated as a United Nations sponsored range by the Prime Minister of India. It has launched a total of 129 rockets up to March 31, 1972.

The sounding rocket range at Thumba affords unique facilities for scientific research in the magnetic equatorial region.

The Rocket Propellant Plant at Thumba set up for manufacturing Centaure slid propellant grains was commissioned in February 1969.

The initial work at Thumba was based on agreements concluded between the Department of Atomic Energy and *National Aeronautics and Space Administration (NASA)* of the U.S.A. Other facilities have been made available through agreements with the Academy of Science of the USSR and the Space Research Organisation of France.

The Indian National Programme for sounding rockets is mainly aimed at studying the region of the atmosphere from 40 km to 300 km. Observations can be made with balloons up to 40 km. and with artificial earth satellites above 200 km. The region between 40 km. and 200 km. can therefore best be sounded through rockets.

The programme involves two types of rockets. The small rocket would be able to carry instruments weighing up to 10 kg. to heights of above 70 km. and would fall into the ocean some 50 to 100 km. to the west of the launching pad.

A bigger two-stage rocket would be used to carry the scientific instruments weighing up to 40 kg. to heights up to 150 km.

The first two-stage unguided rocket was launched successfully from the Thumba Station on Nov. 21, 1963. The assembling and launching of the rocket was done by Indian scientists.

An *Experimental Satellite Communication Earth Station* at Ahmedabad, established by the Indian National Committee for Space Research with the assistance of the U. N. Special Fund, started operation in Aug. 1967 and successfully carried out several communications tests. One of the objectives of the Station is to train scientists and engineers of India and of other developing countries in space communications technology. A *College of Satellite Communi-*

cations Technology, attached to the station, was inaugurated on Nov. 1. 1967.

The first Indian-developed rocket, *Rohini-RH*. 75, to conduct meteorological experiments, was successfully launched from the Thumba Station on Nov. 20, 1967.

A Centaure rocket was successfully launched from the Thumba Station on Nov. 3, 1968, marking the beginning of a series of experiments to study the celestial X-ray sources. The X-ray astronomy payload and instrumentation and the launcher from where the rocket was fired, were all India-made.

A fibre glass filament wound rocket motor, 125 mm. in diameter, was successfully flight-tested at Thumba on June 6, 1969.

A second rocket launching station will be set up on the east coast of India, on Sriharikota Island in the Nellore district of A. P. It will be used for testing rocket developed at the Space Science and Technology Centre at Thumba. It will also serve as a satellite launching base.

An important development in the space programme is the NASA-DAE Statellite ITV Experiment Project which entails the beaming of India-prepared programmes from NASA Statellite ATS-F for about one year in 1972-73, to 5,000 television sets located in rural areas of some selected regions. A special group has been set up in ISRO to look after the planning, organization and management of this experiment.

Meanwhile, the Experimental Satellite Communication Earth Station is engaged in building the Arvi Commercial Satellite Communication Earth Station equipped to carry 48 high quality voice channels, a task that is being undertaken by an Indian team for the first time. The Station is also engaged in conducting its regular training courses for personnel from India and other developing countries. The Arvi station has been estimated to cost Rs. 5.25 crores.

SPACE RESEARCH ESTABLISHMENTS IN INDIA

Thumba Equatorial Rocket Launching Station (TERLS), Thumba, U.N. sponsored sounding rocket range for scientific investigations of the upper atmosphere over the geomagnetic equator which passes close to Thumba. TERLS became operational in November 1963. It is open to all members of the United Nations for conducting scientific investigations.

The location of a rocket launching site on the geomagnetic equator offers unique facilities for investigations on problems of meteorology and on the ionosphere. The ionosphere over this region has features like the equatorial electorjet—a narrow stream of extremely high electric current, flowing from west to east.

Space Science and Technology Centre (*SSTC*), on Veli Hill, by the side of the Thumba Equatorial Rocket Launching Station, was set up in 1965. SSTC is the Research and Development unit of the Indian Space Research Organization and is responsible for the following: (i) to conduct research and development on systems and their components required in space research, (ii) to carry out prototype design and pilot production of equipment resulting from its R & D activities, and (iii) to develop indigenously a satellite launch capability of relevance not only for scentific exploration, but also for many applications of outer space in the fields of communication, meteorology and remote sensing.

Rocket Propellant Plant (*RPP*), Thumba, was commissioned in February 1969 and is engaged in the production of solid propellant blocks. In order to support the satellite launch vehicle programme and produce new solid propellants under development at SSTC its facilities are being expanded.

Rocket Fabrication Facility (*RFF*) Thumba, was commissioned in January 1971 and is responsible for undertaking production of rockets and other hardware developed at SSTC.

Sriharikota Rocket Range (*SHAR*). A satellite launching station being set up at Sriharikota island situated in Andhra Pradesh, about 60 kilometres north of Madras City.

The Station will provide a suitable range for launching scientific and technical satellites using multi-stage rockets. This work cannot be undertaken at the Thumba Equatorial Rocket Launching Station (TERLS) since it has a relatively small area surrounded by thickly populated villages, and for the important reason that it is advantageous to launch a satellite in the eastward direction to benefit from the Earth's rotation.

Solid Propellant Space Booster Plant (*SPROB*), at Sriharikota. This is for production of large size propellants for the satellite programme.

Static Test & Evaluation Complex (*STEX*), Sriharikota. This consists of facilities for static tests and simulated high altitude tests of rocket motor and pyrotechnics.

Rocket Sled Facility (*RSF*) Sriharikota. This is a high speed rocket testing facility for dynamic testing of some of the sub-systems of space vehicles.

Experimental Satellite Communications Earth Station (*ESCES*) Ahmedabad. Set up in August 1967 ESCES imparts instruction in satellite communications technology to students from India and other developing countries. The Station has a 14-meter diameter dish antenna.

Satellite Instructional Television Experiment (SITE) Group, Ahmedabad. The SITE Group was specially created in April 1970 following the signing of the agreement between the DAE and NASA for the conduct of a joint satellite TV experiment. This Group has the full responsibility for the planning, management, operation and evaluation of SITE.

Auto-Visual Instructional Division (AVID), New Delhi, is a part of the Satellite Instructional Television Experiment (SITE) Project. Formed on June 1, 1971, it looks after the instructional aspects and objectives of SITE.

Satellite Communication Systems Division (SCSD) is responsible for systems design, management, manufacturing, installation and commissioning of satellite communication earth station systems.

Electronics Systems Division, Ahmedabad, was set up in April 1970 to undertake the responsibility for the hardware aspects of the DAE-NASA Satellite ITV experiment, for which India has the full responsibility for the ground segment.

Microwave Antenna System Engineering Group (MASEG), Bombay, was set up in February 1970 for carrying out research and development in the field of Microwave Antenna Systems with particular reference to the space research programme.

Transport

ADMINISTRATIVE SET-UP—The Ministry of Shipping and Transport is responsible for the administration of subject which fall within List I and II of the Seventh Schedule to the Constitution of India, shipping, light-houses and lightships, shipbuilding in the public sector, major ports, national highways and road development, road transport, inland water transport, Central Road Fund, Motor Vehicles legislation, Shipping Corporation of India, Mughal Lines, Hindustan Shipyards Ltd., Central Road Transport Corporation, Central Inland Water Transport Corporation etc. etc.

ROADS

SHORT HISTORY OF ROAD PROGRESS—The present road system is a superstructure raised on the old Mughal and other roads. But the Government's entire energy being directed towards the opening of railways, roads were regarded as of local importance, a fit subject for devolution. But the circumstances changed after the World War I. Motor transport began to come in the forefront and became a common feature on the principal roads throughout the country. A resolution was carried in the Council of State in 1927 for the improvement of the road system with the result that a committee of both the chambers of the Central Legislature was set up under the chairmanship of Dr. M. R. Jayakar, to investigate and report. The Jayakar Committee in 1928 reported that road development was passing beyond the capacity of Provincial Governments and local bodies, that it was becoming a matter of national importance and it might be a proper charge of Central revenues. A Central Road Organisation was set up in 1930 and a Transport Advisory Council in 1935.

The total length of roads in the country on 31st March, 1972 was about 12,54,000 kms.

ROAD ADMINISTRATION—Road development is shared by the Centre and the States, the former being responsible for the National Highways and certain selected roads of strategic or other importance and the States for their own State and village roads. In 1947, the Central Government assumed the responsibility of the National Highways.

CENTRAL ROAD FUND—The creation of Central Road Fund in 1929 on the recommendation of Jayakar Committee, constitutes a milestone in the history of road transport in India. This non-lapsable Fund derives its revenue from the levy of an additional duty of customs and excise on non-aviation motor spirit. Money from the Central Road Fund is provided to States by way of allocations and grants-in-aid.

NATIONAL HIGHWAYS—The Central Government under the National Highways Act, 1956, took the responsibility for the construction of National Highways. The existing system of National Highways includes about 28,819 km. of roads.

NATIONAL HIGHWAYS (Statewise)
(in kilometre)

Andhra Pradesh	2313	Maharashtra	2393
Assam	1366	Nagaland	110
Bihar	1913	Orissa	1371
Gujarat	1088	Punjab	451
Haryana	732	Rajasthan	1258
Himachal Pradesh	400	Tamil Nadu	1707
Jammu & Kashmir	544	Uttar Pradesh	2341
Karnataka	1313	West Bengal	1455
Kerala	418	Delhi	72
Madhya Pradesh	2686	Manipur	212

LIST OF NATIONAL HIGHWAYS

National Highway No.	Description of National Highways	Total Kilometre
1	Connecting Delhi, Ambala, Jullundur and Amritsar proceeding to the border between India and Pakistan.	469.20
1-A	Connecting Jullundur, Madhupur, Jammu, Banthal, Srinagar, Baramula and Uri.	652.74
2	Connecting Delhi, Mathura, Agra, Kanpur Allahabad, Varanasi, Mohania, Barhi and Calcutta.	1,387
3	Connecting Agra, Gwalior, Shivpuri, Indore, Dhulia, Nasik, Thana and Bombay.	1,122.09
4	Starting from its junction near Thana with National Highway No. 3 and connecting Poona, Belgaum, Hubli, Bangalore, Ranipet, and Madras.	1,207.20
5	Starting from its junction near Baharagora with National Highway No. 6 and connecting Cuttack, Bhubaneswar, Visakhapatnam, Vijayawada and Madras.	1,457.62
6	Starting from its junction near Dhulia with National Highway No. 3 and connecting Nagpur, Raipur, Sambalpur, Baharagora and Calcutta.	1,578.32
7	Starting from its junction near Varanasi with National Highway No. 2 and con-	2,324.63

National Highway No.	Description of National Highways	Total Kilometre
	necting Mangawan, Rewa, Jabalpur, Lakhnadon, Nagpur, Hyderabad, Kurnool, Bangalore, Krishnagiri, Salem, Dindigul, Madurai and Cape Comorin (Kanya Kumari).	
8	Connecting Delhi, Jaipur, Ajmer, Udaipur, Ahmedabad, Baroda and Bombay.	1.365.29
8-A	Connecting Ahmedabad, Limbdi, Morvi and Kandla.	399.42
8-B	Starting from its junction near Bamanbore with National Highway No. 8-A and connecting Rajkot and Porbandar.	201.36
9	Connecting Poona, Sholapur, Hyderabad and Vijayawada.	778.50
10	Connecting Delhi and Fazilka and proceeding to the border between India and Pakistan.	382.41
11	Connecting Agra, Bharatpur, Jaipur and Bikaner.	547.36
12	Connecting Jabalpur, Bhopal and Biaora.	400.51
13	Connecting Sholapur in Maharashtra and Chitradurga in Mysore.	419.42
22	Connecting Ambala, Kalka, Simla, Narkanda, Rampur and Chini and proceeding to the border between India and Tibet near Shipki-La.	446.58
24	Connecting Delhi, Bareilly and Lucknow.	439.34
25	Connecting Lucknow, Kanpur, Jhansi and Shivpuri.	306.37
26	Connecting Jhansi and Lakhnadon.	386.42
27	Connecting Allahabad with National Highway No. 7 near Mangawan.	94.54
28	Starting from its junction near Barauni with National Highway No. 31 and connecting Muzaffarpur, Pipra, Gorakhpur and Lucknow.	600.06
28-A	Starting from its junction near Pipra with National Highway No. 28 and connecting Sagauli and Raxaul proceeding to the border between India and Nepal.	67.18

National Highway No.	Description of National Highways	Total Kilometre
29	Connecting Gorakhpur, Ghazipur and Varanasi.	203
30	Starting from its junction near Mohania with National Highway No. 2 and connecting Patna and Bakhtiyarpur.	208.40
31	Starting from its junction near Barhi with National Highway No. 2 and connecting Bakhtiyarpur, Mokahmeh, Purnea, Dalkhola, Siliguri, Sivok, Cooch Behar, North Salmara and proceeding generally via Nalbari Charali and Amingaon to its junction with National Highway No. 37 near Pandu.	1,169.75
31-A	Connecting Sivok and Gangtok.	94.14
31-B	Connecting North Salmara to its junction with National Highway No. 37 near Goalpara.	19.31
32	Starting from its junction near Gobindpur with National Highway No. 3 and connecting Dhanbad, Purulia and Jamshedpur (Tatanagar).	195
33	Starting from its junction near Barhi with National Highway No. 2 and connecting Ranchi and Jamshedpur (Tatanagar) and proceeding to its junction with National Highway No. 6 near Baharagora.	318.65
34	Starting from its junction near Dalkhola with National Highway No. 31 and connecting Berhampore, Barasat and Calcutta.	419.62
35	Connecting Barasat and Bangaon and proceeding to the border between India and Bangladesh.	48.07
37	Starting from its junction near Goalpara with National Highway No. 31 and connecting Gauhati, Jorhat, Kumargaon, Makhum and Saikhoa Ghat.	666.45
38	Connecting Makhum, Ledo, and Lekhapani.	54.10

National Highway No.	Description of National Highways	Total Kilometre
39	Connecting Kumargaon, Imphal and Palel and proceeding to the border between India and Burma.	424.86
40	Connecting Jorhat and Shillong and proceeding to the border between India and Bangladesh near Dawki.	161.33
41	Between its junction near Kolaghat with National Hihgway No. 6 and the point where it touches Haldia Port.	52.09
42	Starting from its junction near Sambalpur with National Highway No. 6 and proceeding via Angul to its junction with National Highway No. 5 near Cuttack.	253.66
43	Connecting Raipur and Vizianagram and proceeding to its junction with National Highway No. 5 near Vizianagram.	553.80
45	Connecting Madras, Tiruchirapalli and Dindigul.	407.76
46	Connecting Krishnagiri and Ranipet.	143.63
47	Connecting Salem, Coimbatore, Trichur, Ernakulam. Trivandrum and Cape Comorin (Kanya Kumari).	585.38
47-A	Starting from its junction near Trichur with National Highway No. 47 and connecting with the West Coast Road near Challisseri.	31.40
49	Connecting Madurai and Dhanushkodi.	181.04
50	Connecting Nasik with National Highway No. 4 near Poona.	199.15

BORDER ROADS DEVELOPMENT BOARD—This Board was formed in March 1969 to accelerate the economic development of North and North-Eastern border areas by making these areas accessible through the development of arterial routes. It involved construction of 7.400 kms. of new roads, improvement of 5.160 kms. of existing roads and surfacing of 10.850 kms. of roads.

The important roads which are now available for regular traffic, are : (i) Hindustan-Tibet Road up to 176 miles from Simla ; (ii) road to Bomdi-La in Arunachal Pradesh and (iii) a main road in the eastern Bhutan.

STANDARD ROAD RESEARCH AND TECHNICAL ACTIVITIES—The Central Designs Office of the Wing deals with type designs for route-making for the National Highways and for furlong and boundary stones, principles to be followed in the erection of advertisement boards on road sides, form of recording data on bridges, security of designs for bridges, production of road-rollers, manufacture of road-making machinery etc.

The **Central Road Research Institute** was opened at Okhla in Delhi on July 16, 1952, for the research on road engineering. Technical advice is also given to the State Governments on various problems concerning road works, such as, traffic surveys, road economy studies, road geometries, design of junctions, siting of motor-fuel filling stations, etc.

ROAD TRANSPORT

ADMINISTRATION—Passenger transport has been nationalised in varying degrees in the States and Union Territories. In many of them statutory corporations have been set up for providing the service. Goods transport continues to be in the private sector. In Assam and North Bengal area, however, the Central Road Transport Corporation Ltd., set up under Government auspices, with headquarters at Siliguri, to fill the void created by the strike of the crew of the Rivers Steam and Navigation Company and to meet the emergency created by the Chinese invasion, operates to maintain essential supplies in the region.

An **Inter-State Transport Commission** has been set up for the development, co-ordination and regulation of road transport services on inter-State routes in consultation with the State Governments concerned, in the lesser developed regions in Andhra Pradesh, Madhya Pradesh, Maharashtra, Karnataka and Uttar Pradesh.

To ensure proper co-ordination between the different modes of transport on one hand and the Central and State policies on the other, the Government of India have set up the **Transport Development Council, Road and Inland Water Transport Advisory Committee, and Transport Co-ordination Committee.** An Association of State Road Transport undertakings was set up in 1963, to co-ordinate the activities of the undertakings and to secure procedural uniformity, high standards of service and economic operations.

A **Directorate of Transport Research** has been organised in the Department of Transport as a district unit, which apart from the usual duties of advising the Ministry of Transport on various economic and statistical matters, analyses and interprets the economic implications of the current and future development programme.

Central Road Transport Corporation Ltd. was incorporated on 6th March, 1964, with an authorised capital of Rs. 2 crores. The main function of this Corporation is to supplement the transport capacity by road on inter-State routes in India, specially in the eastern sector of the country.

ROPEWAYS—Ropeways are used in India in areas in hilly and broken countries where valleys and streams abound and gradients are steep and where other forms of communication are primitive or non-existent. These conditions obtain in the foothills of the Himalayas and in some parts of South India. In India, the use of ropeways is confined to the movement of materials and merchandise. The following are the main ropeways operating in India at present— (1) **Darjeeling Bijanbari monocable ropeway**, 5 miles long with one span of 6,000 ft. (2) **Monocable ropeway** at Kalimpong, which climbs 3,400 ft. in its length. Both these ropeways are regarded as extensions to the railway system. (2) Cherra-Chatak ropeways at Cherrapunji in Meghalaya. (4) **Annamalai ropeway** in South India serves tea and coffee garden on the 5,000-foot high plateau.

The world's longest and fastest ropeway was commissioned in Feb. 1966 at the Jharia coal mines in Bihar. It is 30 kilometers long and has been built at a cost of Rs. 3.33 crores. It conveys sand from the bed on the Damodar river to the mine site at the rate of 1,350 tonnes per hour.

The 8-km-long India's first passenger-cum-goods ropeways near Darjeelng was opened on May 8, 1968. It was constructed at a cost of Rs. 28 lakhs.

Apart from these several purposes, public or semi-public applications, Ropeway Transport is extensively used in the tea-planting district. It is also found in coal-mining areas, mainly in Bihar and W. Bengal, where it provides a particularly economical method of transporting waste to spoil damps. It is used in the manufacture of cement and in the working of quarries, mines, sand, gravel and clay pits. Ropeways are used elsewhere in civil engineering for large constructions, such as masonry dams and bridges. There are more than 100 ropeways oprating in India today.

INLAND WATERWAYS

POSITION OF INLAND WATERWAYS—There are at present over 8,800 kms. of navigable waterways, of which the important ones are the Ganga and the Brahmaputra and their tributaries, the Godavari and the Krishna and their canals, the backwaters and canals in Kerala, the Buckingham Canal in the Tamil Nadu and Andhra

Pradesh, the West Coast canals and the Mahanadi canal in Orissa. At present, 2,500 kms. of rivers are navigable by mechanically propelled vessels and 5,700 kms. by large country boats.

The **Central Inland Water Transport Corporation Ltd.** came into existence in February 1967. Shipbuilding, ship repairing and general engineering at its Rajabagan Dockyard, automobile repairs and body building at its Kulpi Workshops, lighterage and ferry services on the river Hooghly, dredging works, etc. are some of its activities.

Ports

CLASSIFICATION—With a coast-line of 5,690 km., India possesses only ten **major ports**, which are Bombay, Cochin, Mormugao, Visakhapatnam, Madras, Calcutta, Kandla, Paradeep, Tuticorin and Mangalore. The Indian coast-line is also served by 19 intermediate ports and about 225 minor ports, of which 150 are working ports.

Technically, a major port is one which is capable of taking ocean-going steamers with a registered tonnage of 4,000 or more and berth them along harbour and it must carry on a minimum requisite trade of 5,000,000 tonnes per annum. Other ports with an annual cargo tonnage below 100,000 but not less than 1,500, which have any importance for any reason (such as passenger amenities, customs or naval requirements etc.), are classified as intermediate ports and the rest as minor ports.

ADMINISTRATION—All the major ports are being administered by statutory autonomous Port Trusts.

NATIONAL HARBOUR BOARD—The Government of India formed a National Harbour Board in August 1950 to advise the Central and State Governments on matters of general policy relating to port management and development. The Board is composed of the Government of India, State Governments and of the representatives of Parliament, major port authorities and non-official members of trade, industry and labour and has the minister for Transport and Shipping as its Chairman. The National Harbour Board constitutes the principal forum for discussing common problems relating to ports.

MAJOR PORTS

BOMBAY—Situated about midway on the west of India, it is the only natural deep-water harbour of India. Possesssing almost all the natural facilities for shipping, it is one of the safest and most spacious of the great seaports of the world. Almost one-half of the foreign trade of India passes through Bombay Port. The harbour covers 75 square miles and provides secure and ample shelter for shipping at all seasons of the year, being 14 miles long and 4 to 6 miles wide with a general depth varying from 22 to 40 feet. Seeds, hides and skin, cotton, oilcakes, piecegoods, turmeric, ores, tobacco are chief exports from Bombay. There are three docks at Bombay Port—Alexandria, Victoria and Prince's.

CALCUTTA—is the largest terminal port in S. Asia. Situated on the Hooghly river, 90 miles from the Bay of Bengal, it commands the largest and the richest hinterland. It not only handles the import and export trade of West Bengal, Assam and Bihar, but most of the exports of U.P., Orissa and Madhya Pradesh are sent through Calcutta Port. The chief exports are coal, tea, gunnies, bone and bone-meal, skin, ham, iron and steel manufactures, lac, oil other than petroleum, scrap ores, pig ron, hides, mica. The principal imports are salt, foodgrains and flour machinery, petroleum, iron and steel, other metals, lubricating oil, cement, rubber, chemical products, soda-ash, sugar, tobacco, paint, varnish etc. Calcutta suffers from the inevitable disadvantages due to its location, several miles inland on the bank of the estuarine Hooghly, which is subjected to strong tides and bores. Calcutta's shipping is at the mercy of the tides. The ships can enter and clear only at a fixed hour. The port of Calcutta has two main docks—Kidderpore and Netaji Subhas. At Budge Budge, some 14 miles from Calcutta, there are 8 floating jetties for oil tankers. There are 5 dry docks at the port.

The main problem is the improvement in the Hooghly drafts. The supply of upland water through Farakka Barrage (see Index) would ease present situation. In spite of the improvements in the Hooghly bars, the deep-draft vessels would be unable to go up to upper reaches of the river. Hence the need arises for a subsidiary port at *Haldia*, which is being built. The project envisages an auxiliary dock system to provide relief to Calcutta Port, with 6 berths, mechanised facilities for handling bulk cargo like mineral ore, coal, etc. and an oil jetty in the river outside the dock system. The project is estimated to cost Rs. 53.83 crores, including a foreign exchange component of about Rs. 7 crores. An oil refinery is also expected to be built at Haldia. A steady 40-ft. draft would help to carry bulk carries and tankers. For the present, Haldia is being used as an anchorage for the lightening or deep-draft foodgrain ships in fair-weather season.

COCHIN—is 580 miles south of Bombay and 200 miles north of Cape Comorin. It is the finest natural harbour in the East. Annual traffic for this Port is around 2.4 million tonnes. Behind an opening from the sea which is about 400 yards wide. there is an area of 120 sq. miles of sheltered backwater, a calm harbourage all the year round within a vast expanse of lagoons. Even in the worst monsoon weather, vessels can lie comfortably in the harbour and carry on landing and shipping operations. The Port of Cochin serves most of the Malabar and Travancore-Cochin area. It lies on the direct route to Australia and the Far East from Europe. Its hinterland is rich in natural produce, such as pepper, cardamom, tea, coffee, rubber, timber etc. The Port, which includes the Willingdon Island, is an area famous for its system of backwaters and inland waterways. The range of exports covers coir yarn, fibres, mats and mattings, cashew-kernels, cashew-shell liquid, spices, lemongrass oil, raw earth concentrates, cotton, handloom piecegoods, cotton sewing thread, crude drugs, soap. hydrogenated oil and glycerine ; imports cover a wide field including coal, chemicals, grains, hardware, paper, petroleum and petroleum products, copra and metals.

KANDLA—has been developed after independence as a result of partition. With the loss of Karachi after partition, there was no big port along 1,000-mile long coast-line between Bombay and Karachi to serve the vast hinterland. So in 1948, the Government of India decided to start a harbour at Kandla in Gujarat, to relieve the pressure on Bombay Port. Kandla was declared a major port on April 8, 1955 with a hinterland—Rajasthan, Punjab, Delhi, north and central Gujarat, western Madhya Pradesh, Jammu and Kashmir, western and central Utta Pradesh It is a centrally administered port. A Free Trade Zone was created at the port on March 7, 1965 in a 320-acre area near the port and provides for the establishment of small and medium industrial units and the necessary facilities for them. This is the first of its kind in this country. The township of Gandhidham has grown near Kandla on the Kutch Coast.

MADRAS—This third largest port of India, on the east coast of India, has a vast hinterland comprising the States of Tamil Nadu Andhra Pradesh and Kerala. It was an open roadstead with surfbeated coastlines, but the present harbour has been formed by two concrete walls projecting into the sea. It is an artificial port developed by man's ingenuity. This port links the city with the tobacco-growing areas and brings large tonnages for export. Chief imports are oil, foodgrains, metals, timber, textiles, chemical manures, steel, hardware, etc. Chief exports are hides and skins, edible oils, textiles, ores, tobacco, onions, mica, etc.

Jawahar Dock, the wet dock, has been built at a cost of Rs. 8 crores, and was opened on 6th November, 1964. The dock can take in 6 vessels at a time.

MORMUGAO—One of the finest ports in Asia, was once a Portuguese port, now an Indian port after the occupation of Goa by India. Indian Ports Act of 1908 was extended to this port on 30th Nov. 1963 and it is recognised as a major port from 15th Dec. 1963. It has a great export trade including mainly iron and other materials. The Department of Transport took over the administrative control of this port on 8th Nov., 1962. Endowed with a fertile and minerally rich hinterland the port accounts for nearly 60 p.c. of the country's total iron export. Thanks to the rich iron ore deposits found in the region nearby and the cheap transport facilities, the iron ore traffic through Mormugao is prospering very well. About 50 ships on an average can be at anchor in the sheltered water of the port during the fair season between September and June. During monsoons only 15 ships can be accommodated.

PARADEEP—is situated in the Bay of Bengal, 45 miles south of the estuary of Mahandi river. It s about 60 miles from Cuttack. The estuary work was started in Nov. 1962 with Yugoslav collaboration. The Port (India's deepest all-weather seaport so far) was formally declared open on March 12, 1966. Originally Orissa State Project, primarily for the export of minerals and specially iron ore, it was taken over by the Central Government with effect from June 1, 1965. A Port Trust was set up at Paradeep on Nov. 1, 1966.

VISAKHAPATNAM—is a great ore-exporting and the only landlocked and protected Indian port situated about midway between Calcutta and Madras. Owing to a hill-range bordering in the sea, the harbour remains concealed from the vessels plying on the ocean outside. In October 1933, the Port was opened to ocean-going ships. The principal articles of export are manganese ore, bunker coal, tobacco, myrobalan, and oilseeds. Exports are much larger than imports.

It is now the centre of ship-building industry in India, where Scindia Steamship Company first established ship-building yards.

MANGALORE—is a tidal port served chiefly by backwater communication with hinterland. The backwater of Mangalore is 3½ miles long and 2,000 ft. wide. Mangalore is the north-western terminus of

Southern Railway. The chief exports are pepper, tea, cashew, kernels. coffee, sandalwood from Karnataka, rice, salt fish, dried fruits, fish-manure etc. Mangalore is the favourite port for the Lakshadweep Islanders who bring their coir and other coconut products for sale here.

TUTICORIN—This Port is open all the year round and has, next to Madras and Cochin, the largest trade in southern India. The harbour is so shallow that steamers anchor about 5 miles from the shore and continuous dredging is necessary to keep the channel open between the sea and roadstead.

SOME INTERMEDIATE AND MINOR PORTS

Alleppy—is the premier port and commercial centre in Kerala and is situated about 35 miles south of Cochin. A canal connects the port with the interior backwater. It possesses a roadstead affording safe anchorage during the greater part of the year. The chief export are copra, coconuts, coir fibre and matting, cardamom, ginger and pepper.

Bhatkal—is ideally situated to meet the need of Karnataka. A number. of important industries are located in this area which is known as Nalanda area.

Calicut—is some 42 miles from Tellicherry. The principal exports are coir, fibre, copra, coffee, tea, pepper, ginger, rubber, groundnuts, raw cotton and fish-manure.

Chandbali—is situated in an important part of Orissa and is 38 miles away from sea anchorage. It has a direct flourishing trade with Calcutta.

Kakinada—is situated on the Cocanda Bay, just north of the Godavari river, some 90 miles south of Visakhapatnam and 270 miles north of Madras.

Karikal—was a French Settlement covering an area of 58 square miles and a sea-board of 12 miles and is almost surrounded by Tanjore district.

Karwar—is located in the shelter of Karwar head on the Arabian Sea.

Nagapattinam—is the chief port in the Tanjore district, about 12 miles south of Karikal.

Pondicherry—is now an important port of India on the Coromondel coast, 100 miles south of Madras. The roadstead possesses a good anchorage.

Quilon—is the Coilum of Marco Polo. It is connected with

Alleppy by backwaters. Vessels anchor about ¾ mile from the shore and a railway siding runs up to the landling place.

Saurashtra Ports—For purposes of administration, all the ports in Saurashtra have been divided into six groups, each under a port officer. The six groups are—

Porbandar—is an open roadstead in the Arabian sea.

Bhavnagar—is the most developed port of Saurashtra.

Mandvi—is an open sea roadstead on the Gulf of Kutch.

Bedi—is a well-equipped lighterage port on the south of Gulf of Kutch.

Veraval—is located on the south-west coast of Saurashtra by the Arabian Sea.

Okha—is an western Indian port situated in a detached portion of the Kathiawar peninsula. The port is available even to large ships at all stages of tides and at all seasons of the year.

Surat—Situated 14 miles from the Arabian Sea with which it is connected by a river, is navigable only by small country crafts.

Statement showing the traffic handled, number of ships entered the major ports and their gross tonnage during the years 1973-74 1974-75 and 1975-76 (Upto October, 1975)

(In Tonnes)

Major Ports	Year	Imports	Exports	Total	No. of ships entered	Gross Tonnage
1	2	3	4	5	6	7
Calcutta (including Haldia)	1973-74	3,890,031	2,435,134	6,325,165	1,054	8,855,045
	1974-75	5,085,486	2,450,407	7,535,893	1,044	8,781,478
	1975-76 (Upto Sept. 75)	2,565,576	1,828,213	4,393,789	487	4,646,572
Bombay	1973-74	14,246,066	4,216,836	18,462,902	2,381	19,177,067
	1974-75	13,861,273	3,866,065	17,727,338	2.289	19,104,379
	1975-76 (Upto Oct. 75)	7,011,568	2,124,120	9,135,688	1,342	11,230,106
Madras	1973-74	4,688,405	3,061,564	7,729,969	902	9,478,122
	1974-75	4,760,511	3,155,479	7,915,990	885	9,902,106
	1975-76 (Upto Oct. 75)	3.365,944	1,612,215	4,978,159	562	6,588,053
Cochin	1973-74	2,875,456	845.383	3,720,839	853	6,270,647
	1974-75	3,589,888	1,223,440	4,813.328	884	7,246.023
	1975-76 (Upto Oct. 75)	2,049,315	594,802	2,644,117	512	4,323,029
Visakhapatnam . .	1973-74	2,996,179*	4,958,963	7,955,142	616	7,379.420
	1974-75	2,882,682*	4,271,628	7,154,310	538	6,326.501
	1975-76 (Upto Oct. 75)	1.659.731*	2,967,794	4.627,525	301	3.948.760

*Including Transhipped Cargo.

—*concld.*

1	2	3	4	5	6	7
Kandla	1973-74	2,903,342	218,344	3,121,686	314	3,160,523
	1974-75	3,239,970	303,666	3,543,636	322	3,516,322
	1975-76 (Upto Oct. 75)	1,687,322	156,713	1,844,035	169	1,712,044
Mormugao	1973-74	629,244	13,705,780	14,335,024	687	9,635,349
	1974-75	723,875	13,408,455	14,132,330	668	9,928,882
	1975-76 (Upto Oct. 75)	385,532	4,393,535	4,779,067	262	3,517,679
Paradip	1973-74	1,319	2,286,723	2,288,042	103	1,548,000
	1974-75	61,400*	2,544,863	2,606,261	110	1,761,000
	1975-76 (Upto Oct. 75)	4,173*	1,666,610	1,670,783	64	1,082,000
Mangalore	1973-74	—	—	—	—	—
	1974-75	26,295	65,103	91,398	77	269,500
	1975-76 (Upto Oct. 75)	136,346	60,927	197,273	98	343,000
Tuticorin	1973-74	—	—	—	—	—
	1974-75	74,420	—	74,420	8	101,329
	1975-76 (Upto Oct. 75)	126,870	—	126,870	15	212,461
Totals (for all Major Ports)	1973-74	32,230,042	31,728,727	63,958,769	6,910	65,504,173
	1974-75	34,305,800	31,289,106	65,594,906	6,825	66,937,520
	1975-76 (Upto Oct. 75)	18,992,377	15,404,929	34,397,306	3,812	37,603,704

*Including Transhipped Cargo.

Statement showing the Financial Position of the Major Ports for the years 1973-74 and 1974-75

(Rupees in lakhs)

	Cochin Port		Paradip Port		Kandla Port		Bombay Port	
	1973-74	1974-75	1973-74	1974-75	1973-74	1974-75	1973-74	1974-75
(a) Operating Income	391.15	571.69	188.15	316.56	299.69	403.03	2915.28	3364.37
(b) Operating Expenditure	429.13	526.88	485.93	389.48	291.10	473.50	2450.57	3069.06
(c) Operating Surplus (+) Deficit (—)	(—)37.98	(+)44.81	(—)297.78	(—)72.92	(+)8.59	(—)70.47	(+)464.71	(+)296.31
(d) (+) Finance & Misc. Income	24.65	38.54	58.35	79.31	50.25	76.97	417.49	582.37
(e) Balance	(—)13.33	(+)83.35	(—)239.43	(+)6.39	(+)58.84	(+)6.50	(+)882.30	(+)878.68
(f) (—) Finance & Misc. Expenditure	127.32	172.29	105.20	134.05	57.56	77.92	621.93	343.16
(g) Balance	(—)140.65	(—)88.94	(—)344.63	(—)127.66	(+)1.28	(—)71.42	(+)260.37	(+)535.52
(h) (+) Amount withdrawn from Reserves	25.00	—	—	—	—	—	26.04	23.98
(i) Balance	(—)115.65	(—)88.94	(—)344.63	(—)127.66	(+)1.28	(—)71.42	(+)286.41	(+)559.50
(j) (—) Transfer to Funds, Debt. charges etc.	93.60	73.09	—	—	3.11	4.27	272.42	544.18
(k) Net Surplus (+) Deficit(—)	(—)209.25	(—)162.03	(—)344.63	(—)127.66	(—)1.83	(—)75.69	(+)13.99	(+)15.32

(Rupees in lakhs)

	Visakhapatnam Port		Mormugao Port		Madras Port		Calcutta Port	
	1973-74	1974-75	1973-74	1974-75	1973-74	1974-75	1973-74	1974-75
(a) Operating Income .	1016.18	1029.26	342.48	416.83	1235.39	1403.67	2423.10	3196.19
(b) Operating Expenditure . .	729.30	952.08	245.86	269.87	1007.01	1169.73	3605.19	4200.02
(c) Operating Surplus (+) Deficit (—) .	(+)286.88	(+)77.18	(+)96.62	(+)146.96	(+)228.38	(+)233.94	(+)1182.09	(—)1003.83
(d) (+) Finance & Misc. Income .	1.87	58.51	14.51	12.94	44.79	92.57	672.00	1018.16
(e) Balance . .	(+)288.75	(+)135.69	(+)111.13	(+)159.90	(+)273.17	(+)326.51	(—)510.09	(+)14.33
(f) (—) Finance & Misc. Expenditure . .	126.18	196.22	32.06	37.36	277.00	328.64	692.98	626.49
(g) Balance . .	(+)162.57	(—)60.53	(+)79.07	(+)122.54	(—)3.83	(—)2.13	(—)1203.67	(—)612.16
(h) (+) Amount withdrawn from Reserves . .	5.81	11.94	10.39	0.69	12.85	21.59	—	—
(i) Balance . .	(+)168.38	(—)48.59	(+)89.46	(+)123.23	(+)9.02	(+)19.46	(—)1203.07	(—)612.16
(j) (—) Transfer to Funds, Debt. charges etc. .	127.28	34.09	36.04	47.61	219.96	333.23	—	—
(k) Net Surplus (+) (Deficit) (—) . .	(+)41.10	(—)82.68	(+)53.42	(+)75.62	(—)210.94	(—)313.77	(—)1203.07	(—)612.16

Shipping

SHIPPING CONTROL DEPARTMENT—The Directorate-General of shipping was set up in Bombay in 1949. It is the central body of the Government of India, controlling the whole problem of shipping in the country. Semi-Government shipping corporations, maritime conventions, seamen's welfare, nautical surveys, licences for deepsea navigation and lighthouses are among the several maritime subjects which are dealt with by the Directorate. Three principal officers of the Mercantile Marine Department at Bombay, Calcutta and Madras function under the jurisdiction of the Director-General. The functions of the Director-General include the implementation of the Government's policies with regard to the development of India's merchant navy and the co-ordination of the activities of various ports.

MERCANTILE MARINE DEPARTMENT—For the purpose of administratioon of the Merchant Sripping laws and rules, the Indian coastline is divided into three districts—Bombay Mercantile Marine District, Madras District and Calcutta District. The most important functions of the Department are: (1) Registration of ships; (2) Periodical survey of seaworthiness; (3) Conduct of examinations for various certificates or competency as navigating and engineer officers.

	Coastal		Overseas		Total	
	No. of ships	GRT	No. of ships	GRT	No. of ships	GRT
i As on 1-4-75 .	64	3,10,976	238	36,18,376	302	38,29,352
ii Tonnage scrapped sold	2	14,897	—	—	2	14,897
iii Tonnage added. .	8	74,684	22	5,74,494	30	6,49,178
iv Net tonnage added. .	6	59,787	22	5,74,494	28	6,34,281
v As on 31-12-75 (i) + (iv) . .	70	3,70,763	260	40,92,870	330	44,63,633

Indian shipping is now operating on the following important routes: India/U.K. Continent, Middle East countries, U.S.S.R. and Black Sea, Poland, G.D.R., Aden and Red Sea Ports. West Asia (Gulf) Ports, West Africa, East Afroca, Canadian Atlantic Ports.

Mexicon, South America and Caribbean Islands, U.S.A. Pacific, River-plate, Brazil, Spain, Australia, New Zealand, Philippines, Indonesia, Japan, Sri Lanka, Bangladesh, Pakistan.

COMMITTEES AND BOARDS

(1) **Consultative Committee of Overseas Shipping Interest**—With a view to ensuring better understanding and co-operation between the Government of India, the country's export trade and the foreign shipping interests operating in India, the above additional Committee was founded in 1955 with 7 members, 4 from overseas shipping conferences, 2 from Indian National Steamsrip Owners Association and one from export trade sphere.

(2) **Consultative Committee of Shipowners**—With a view to bringing about liaison between the Government and the Indian shipping industry, this advisory body has been constituted.

(3) **Shipping Co-ordination Committee and the Chartering Organisation**—was set up in January 1958, to canalise the transport of Government-owned/controlled cargoes in Indian vessels.

(4) **National Shipping Board**—was reconstituted in July 1967. It advises the Government on all matters relating to Indian Shipping.

(5) **Central Advisory Committee for Lighthouses**—This is a statutory body with advisory function, set up under the Indian Lighthouse Act of 1927 and consists of both officials and non-officials.

(6) **Central and Regional Advisory Committee for Sailing Vessels**—were constituted in 1960. The Central Committee advises the Government on important matters of all-India nature affecting the sailing vessels industry. There are at present four Regional Advisory Committees, each at Bombay, Jamnagar, Tuticorin and Masulipatnam.

(7) **Merchant Navy Training Board**—was constituted by the Government of India to function as a Representative Advisory Board to deal with the problems relating to the co-ordination and supervision in respect of the different merchant navy training establishments.

(8) **National Welfare Board for Seafarers**—was set up by the Government of India in 1955, inter alia, to advise the Government on the measures to be taken for promoting welfare of seamen etc.

(9) **Indian National Steamship Owner's Association**—came into existence in 1930 to promote and protect the interests of national shipping, shipbuilding and allied industries.

(10) **Deck Passengers Welfare Committees**—are in existence at the ports of Bombay, Calcutta, Madras and Nagapattinam and look after the facilities of deck passengers of these ports.

MERCHANT SHIPPING ACT—Passed in 1958, this Act, among other things, provides for the first time in the history of independent India, the opening of a register of Indian ships. It also provides for the setting up of a National Shipping Board and a Shipping Development Fund which is made up of loans and grant from the Centre and provide finance for shipping development.

Indian ships are now operating in most of the important overseas liner routes, viz. India/U.K.-Continent, India/U.S.A. (Atlantic & Pacific coasts), India/West Asia Gulf, India/Red Sea Ports, India/U.S.S.R., India/East Africa, India/U.A.R., India/G.D.R., India/Mauritious, India/Malaysia and India/Bangladesh.

SHIPPING CORPORATION AND OTHER COMPANIES

The setting up of Shipping Corporations in the public sector is an important step. The first Shipping Corporation was the Eastern Shipping Corporation, set up in March, 1950 on a State-cum-private ownership basis. On the 15th August, 1956, the Corporation was taken up by the Government. Second Shipping Corporation was the Western Shipping Corporation set up in June 1956 as a wholly Government-owned concern.

These two Government-sponsored Shipping Corporations were merged on Oct. 2, 1961 under the name of Shipping Corporation of India Ltd. (see Index). This Corporation has an authorised capital of Rs. 35 crores and paid-up capital of Rs. 27.95 crores. It has a fleet of 126 vessels aggregating 21.61 lakhs GRT (35.56 lakh DWT) including passenger-cum-cargo ships and tankers. The Corporation now is operating 21 liner services, providing direct sailings to 58 countries in 5 continents.

The Shipping Corporation of India and M/s Arya National Shipping Lines of Teheran (Iran) established a joint shipping line in Iran, named *Irano Hind Shipping Company*. The company started its operation from June 1975.

The Government of India took over the management of the *Jayanti Shipping Co.* on June 10, 1966 for 5 years under an Ordinance. The Shipping Corporation of India looked after the management of the Company. The company was nationalized on 17th October, 1971 through an ordinance. All the 2,88,128 srares excepting 100 thereof had been transferred to the Shipping Corporation of India. These 100 shares were transferred to nominees of the Government. The Company is now managed by an interim board. The fleet of this company consists of 18 vessels.

Moghul Line Ltd. (see Index) which was a subsidiary company of the Shipping Corporation of India Ltd., is now fully a separate Government company with an authorised capital of Rs. 2 crores and has a fleet of 17 vessels engaged mainly in the Haj pilgrim traffic. The company also has a collier and a tanker.

There are other companies operating on overseas and coastal trades.

Indian Companies, now participating in the overseas and coastal trade, are: (1) Scindia Steam Navigation Company owns, with its subsidiaries, about 40 p.c. of total Indian tonnage and operates the largest number of ships. The overseas trades covered are: India-U.K./Continent. India-U.S.A., India-U.S.S.R. (Black Sea ports) and India-West Africa/Mediterranean. (2) India Steamship Co. Ltd. is the second largest shipping company of India. It has a fleet of 18 freighters. The overseas trades covered are: India U.K./Continent, India-South America, India-Black Sea/Eastern Mediterranean ports, and India-Poland. (3) Great Eastern Shipping Co. operates 6 ships in the tramp trades and 10 in the coastal trade, including a tanker which had been chartered to the Stanvac Refinery. (4) Bharat Line operates 11 ships in the coastal, Burma and Persian Gulf trades. (5) Malabar Steamship Co. has 2 ships in the Persian Gulf trades. (6) Surendra Overseas. (7) Ratnakar Shipping Co., Bombay. (8) Chowgule Shipping Co., Bombay. (9) Nilhat Shipping Co. Ltd.. Calcutta.

Merchant Navy Training

Following are the Training Centres—(1) T. S. Rajendra, in replacement of T. S. Dufferin, was commissioned on 16th Aprii, 1972. The annual intake of cadets on the new ship is 125 as against 80 on Dufferin; (2) Directorate of Marine Engineering Training, Calcutta/Bombay (Pre-Sea Training Institution for Marine Engineers); (3) Nautical and Engineering College, Bombay (Institution for Deck and Engineer Officers); (4) T. S. Bhadra; (5) T. S. Mekhala; (6) T. S. Nau Lakshi (last three organise pre-sea training for deck and engine room ratings).

Recruitment of Seamen—The number of seamen available on 1.10.75 for employment at Seamen's Employment Offices in Bombay and Calcutta on foreign-going vessels was 28,525 at Bombay and 11,582 at Calcutta.

Preliminary Course for extra Master and extra first-class Engineer's Certificates—As a first step, towards the ultimate objective of concluding examinations for 'extra' certificates in India preparatory classes have been started. For engineering officers, the classes are being conducted in the D. M. & T., Calcutta and those for nautical officers are being held in the Nautical and Engineering College. Bombay.

Ratings Training Establishments—Three Ratings Training Establishments. viz., Trainingship Bhadra, Calcutta, Trainingship Mekhala, Visakhapatnam and Trainingship Nau Lakshi, train seamen for employment both in the engine room and deck sides.

Recruitment of Seamen—Seamen's Employment Offices were set up at Bombay and Calcutta in 1954 and 1955 respectively, for regulating the supply of seamen on foreign-going ships on the principle of rotation.

Seamen's Welfare Offices at the ports of Bombay, Calcutta and Madras and at Sydney, Glassgow, London and Liverpool abroad look after the interests of the seamen in all affairs.

Shri Narottam Morarji Institute of Shipping was established during 1969-70 for imparting training and holding examinations in subjects dealt with on the commercial side of shipping.

Sailing Vessels—The total number of sailing vessels registered in India as on 31.12.74 was 8037 including about 250 mechanised sailing vessels. During 1974-75, sailing vessels lifted 8,84,762 tonnes of cargo.

SHIPYARDS—Shipbuilding in India was first started by Scindia Steam Navigation Company in 1919. On June 21, 1941, the foundation was laid at Visakhapatnam. The keel of the first ocean-going vessel of 8,000-tonner steamship, Jala Usha, was laid in June 1946, and it was launched in March 1948. This Visakhapatnam Shipyard was purchased by the Government from the Scindia in March 1952. The management is entrusted to the Hindustan Shipyard Ltd., 1/3 share of which is owned by the Government. The total issued and paid-up capital of the company was Rs. 789.35 lakhs.

Government of India has signed an agreement with the Mitsubishi Co. of Japan to build the second shipyard at Cochin comprising a building dock for building ships of 66,000 D.W.T. and a ship repair dock for repairs to ships up to 85,000 D.W.T. at an estimated outlay of Rs. 45.42 crores (see Index).

LIGHTHOUSES AND LIGHTSHIPS—The Department of Light-houses and Lightships is a self-supporting department and its accounts are maintained on a commercial basis. The revenue of the Department is derived from the light-dues levied on shipping under the provisions of the Indian Lighthouse Act, 1927. The Department is maintaining various types of navigation aids which include 115 lighthouses, 7 radio beacons, 8 Decca navigator chain stations, 13 fog signals, 1 lightvessel, 21 lightbuoys, etc., round the coast of India. A training centre to train young men for the specialised requirements of the Department was started in Calcutta in January 1960. There are lighthouse workshops at Bombay, Calcutta, Madras and Jamnagar.

Railways

RAILWAYS IN INDIA—India has an extensive railway network, reaching all major cities. The Indian railways system with a route kilometerage of 60,234 is the largest in Asia. The Indian State Railways are divided into 9 zones. Most of the railways are owned and operated by the Central Government. Those which are still privately owned are narrow-gauge feeder lines and are subject to Government regulation. The Indian Railways make up the second largest single system in the world and four-fifths of India's freight is carried over them for long distance.

Daily, more than 70 lakhs of people board the trains and 6 lakh tonnes of goods are transported to various destinations on 7,093 railway stations. The Indian Railways employ 1.43 million persons at the cost of about Rs. 570 crores per annum.

The first line opened was a small section of 13 miles by the G.I.P. Railways between Bombay and Kalyan on April 16, 1853. The E. I. Railway line between Calcutta and Pandua was the second to follow in August 1854 and the Madras and Southern Marhatta Railway opened a line from Madras to Arkonam in July 1856.

ADMINISTRATION OF RAILWAYS—The responsibility for the overall control and administration of the railways vests in the Railway Board, set up in 1905. The Board consists of a Chairman who is the ex-officio Secretary-General of the Railway Ministry, a Financial Commissioner and three members, each in charge of Mechanical, Staff and Traffic who are of the status of Secretaries to the Railway Ministry. Besides, there are 7 additional members.

Divisional System—In order to provide a unified control of operation and other allied railway activities over a longer area than that of an average district and to vest the responsibility for co-ordinating the working of different departments in the area, Divisional System has been introduced in Indian Railways.

Each Division is under a Divisional Superintendent who functions in his sphere more or less as the General Manager does for the entire Zonal Railway. He is, however, under the control of the General Manager. Specialized departments like stores and workshops are excluded from the Divisional control. These are continued to be controlled by headquarters direct as hitherto.

RAILWAY FINANCE—In 1925, the railway finance was separated from the general finance with the object of relieving the general budget from violent fluctuations, thus enabling the railways to carry on a continuous policy. Under the convention, the railways contribute to the general revenues according to fixed formula.

LOCOMOTIVE AND OTHER PRODUCTIONS—Internal production is now able to meet the railways' normal annual requirements of rails, wagons and coaches. The Government-owned **Chittaranjan Locomotive Works** (see Index) and the Government-assisted Tata Engineering and Locomotive Co. Ltd. are helping to attain self-sufficiency in locomotives. The Chittaranjan Works started production in 1949. The first locomotive was turned out on November 1, 1950. It has produced 2,351 steam locomotives, 268 broad gauge A.C. freight type, 46 A.C. mixed traffic and 30 D.C. freight type electric locomotives, 111 broad gauge diesel shunting and 10 narrow gauge main line diesel locomotives and 2,305 locomotives boilers since its inception.

The **Integral Coach Factory** (see Index) at Perambur (Tamil Nadu) went into production on October 2, 1955 making a major production in passenger coaches. It has produces 6,688 fully furnished coaches since its inception.

The Government-owned **Hindustan Aircraft Ltd.** (see Index) at Bangalore is producing all-steel passenger coaches.

Tre **Diesel Locomotive Works** (see Index) at Varanasi turned out the first locomotive in January 1964. It has produced 507 locomotives since its inception.

TRAINING CENTRES AND RESEARCH—Training facilities for officers in the Engineering and Traffic Departments are provided in railway training and technical institutes. A Staff College for Class I and Class II Officers and Special Class Apprentices was opened at Baroda on January 31. 1952. The College provides facilities for training probationary officers and special class apprentices, refresher courses for junior officers (except medical), and special short-term courses on selected subjects for junior officers. There are 50 training schools. Some of them are traffic training schools. In other schools, loco-training staff, apprentice-mechanics, train-examiners and train-apprentices are trained. A Signal Training School for inspection staff of the Signalling Department was opened in 1967 at Lallaguda in Secunderabad.

As technical advisers and consulting engineers to the Railway Board and the zonal railways, the function of the Research, Designs and Standards Organisation is to ensure that the Indian Railways have sufficient and up-to-date technical know-how to operate as an efficient unit. The RDSO took its present shape in 1957.

There is a **Railway Testing and Research Centre** at Lucknow and a sub-centre at Chittaranjan mainly to help in the promotion of self-sufficiency in railway stores.

ELECTRIFICATION OF RAILWAYS—The first electric train ran on a Bombay Suburban Section on February 3, 1925. By March 1947, the total route length electrified on Indian railways was 4,191 kms.

DIESELISATION—Diesel traction is being adopted gradually.

RAILWAY ZONES—The Indian Railways have been grouped into 9 zones for economy and efficiency of administration. Certain narrow gauge feeder railways owned by private companies are not included in the zonal system, although under the Railway Companies (Emergency Provision) Act, 1951, the Government assumed powers to ensure their efficient operation. The zones are now as follows:—

Zones	Dates of Creation	Headquarters	Route Kilometreage
Southern	Apr. 14, 1951	Madras	10,067.08
Central	Nov. 5, 1951	Bombay	8,849.63
Western	Nov. 5, 1951	Bombay	10,063.74
Northern	Apr. 14, 1952	Delhi	10,364.51
North-Eastern	Apr. 14, 1952	Gorakhpur	1,967.30
Eastern	Aug. 1, 1955	Calcutta	4,049.40
South-Eastern	1955	Calcutta	5,996.13
North-East Frontier	Jan. 15, 1958	Pandu	2,907.06
South-Central	Oct. 2, 1966	Secunderabad	60,757.00

DESCRIPTION OF RAILWAYS

Central Railway—serves Maharashtra, Madhya Pradesh, Andhra Pradesh, Uttar Pradesh, Karnataka, Rajasthan and Punjab. The line consists of the former G.I.P. Railway, Scindia Railway, Dholpur Railway and Nizam's State Railway.

Eastern Railway—covers West Bengal, Bihar and parts of Uttar Pradesh and has its headquarters at Calcutta. It extends to Budge-Budge. Diamond Harbour, Lakshmikantapur and Canning to the south, Petrapol and Gede to the Bangladesh border, Lalgola and Barhowra to the north along both sides of the Bhagirathi and to Mughalsarai to the north-west via Grand Cord, the main line, the Sahibganj loop and the Gomoh-Barkakhana-Daltonganj loop. Starting from Howrah, the main line runs 137 miles to Sitarampur, 2 miles beyond Asansol, from where it radiates in two directions, one via Patna and the other via Gaya to converge at Mughalsarai, where it joins the Northern Railway.

Connecting Calcutta with its vast hinterland, this Railway provides transportation facilities to the rice, sugar, and jute-producing areas of West Bengal and Bihar, coal and steel industries of these two States and mica and iron-ore mines of Bihar. It serves a number of basic industries like metallurgical and steel manufactures at Burnpur, Kulti and Durgapur, chemical fertilizers at Sindri and locomotive production at Chittaranjan, besides a host of other important industries.

North-Eastern Railway—which came into existence on April 14, 1952, serves the northern part of Bihar. This line operates in a well developed agricultural region and carries sugarcane, tobacco and rice.

North-East Frontier Railway—came into existence on January 15, 1958, by separating a portion of the North-Eastern Railway. This line begins in Assam and serves the northern part of West Bengal. The Darjeeling-Himalayan line is within this Railway.

Northern Railway—came into being in 1952 through the synthesis of the three divisions of the former E. I. Railway, a portion of the B. B. and G. I. Railway and the whole of the Eastern Punjab, Jodhpur and Bikaner Railways. This line serves Punjab, Delhi, northern and eastern Rajasthan, and Uttar Pradesh up to Varanasi.

South-Central Railway—was inaugurated on 2nd Oct. 1966. This Railway, with a route kilometreage of 60,757 (2.524 BG, 3.183 MG and 368 NG) and serving 774 stations including Halts and Flag stations, caters to the transport requirements of about 50 million people of Andhra Pradesh, South Maharashtra, North-Western Karnataka and Goa. Stretching from the east coast to the west coast, this Railway traverses through a vast and variegated terrain of fertile plains areas rich in mineral wealth and stone quarries, rocky hills, well wooded as well as barren, and a coastal belt, each of which presents a contrast to the other.

South-Eastern Railway—caters to the needs of 6 States: West Bengal, Bihar, Orissa, Andhra Pradesh, Madhya Pradesh and Maharashtra. Starting from Howrah, it runs up to Kharagpur. Onwards from Kharagpur, the Railway spreads out in three directions. Westwards the main line goes to Nagpur. To the South, the east-coast line runs to Waltair. The third line runs from Kharagpur in the north-westernly direction to serve the coal-fields of West Bengal and Bihar. The Raipur-Vizianagram broad gauge section, opened in 1931, links Visakhapatnam with Madhya Pradesh for carrying the heavy manganese-ore traffic for export. This Railway joins the Eastern Railway at Howrah, Asansol, Gomoh, Barkakhana and Chandrapura. It joins the Southern Railway at Waltair and the Central Railway at Nagpur and Katni. Connecting the ports of Calcutta and Visakhapatnam with their vast hinterlands, it serves the rich paddy fields of West Bengal, hinterlands of Orissa and Madhya Pradesh, as also the coal and steel industries of Bihar and West Bengal. The area covered by this Railway is rich in deposits of essential raw materials, such as iron ore, copper, coal, manganese, lime, bauxite and dolomite. Four of the five major steel plants in the country are located on this railway.

Southern Railway—On April 14, 1951, the three railway systems, viz., Madras and Southern Marhatta Railway, South Indian Railway and Mysore Railway were integrated into a single railway zone—the Southern Railway. This railway covers the major part of the Peninsula south of Vindhya mountains. It serves Tamil Nadu and Kerala States, practically the whole of Karnataka, the Circars and Rayalaseema areas of Andhra Pradesh and part of Maharashtra up to Poona. Goa and Pondicherry are also on this network.

Western Railway—serves Maharashtra, Rajasthan and Madhya Pradesh. This line consists of the former B B. & C. I. Railway, Saurashtra Railways, Rajasthan Railway and Jaipur Railway. This line serves the great industrial areas round Bombay, Ahmedabad and Baroda and handles tremendous quantities of cotton.

SOME RAILWAY ORGANISATIONS

Central Standards Office—at New Delhi, looks after all works connected with the production of standard designs and specifications of all materials, plant and rolling stock in use on Indian

Railways. Three separate branches of this Office deal respectively with mechanical engineering standards, civil engineering standards and specifications while a separate research branch undertake civil and mechanical engineering research.

Indian Railway Conference Association—was first organised in 1871. The present organisation was inaugurated in 1902 establishing the permanent Conference independent of Government. The Association lays down rules for the interchange of stock between railways and acts as a central co ordinating agency for tackling all problems of common interest of the different systems of railways in regard to transport, such as coaching tariff, freight structure, interchange rules, cross traffic rules, etc.

Research, Designs and Standard Organisation—is in the charge of a Director-General for co-ordinating the function of the three different wings of the Organisation.

Consultative Committees—Constant and close consultation between public and the railway administration is served through the following committees—

(1) Regional Railway Users' Consultative Committees at the levels represent the local users in the territories served by the railway including agricultural interests.

(2) Zonal Railway Users' Consultative Committees at the headquarters of each railway zone.

(3) National Users' Consultative Council at the centre deals with matters of all-India importance relating to services and facilities provided by the railways.

(4) Divisional Regional Railway Users' Consultative Committees were set up in 1958 for each division of the railways on which divisionalisation has already been brought out.

(5) Zonal Parliamentary Committees have been formed, which meet the respective General Managers of the Zonal Railways to deal with the great variety of problems of interest.

Other Committees : Time-table Committee, Suburban Railway Users' Consultative Committee, Passenger Amenities Committee, Catering Supervisor Committee and Book-stall Committee

Railway Rates Tribunal—was established in 1949. In enquires into complaints lodged by the commercial bodies and representative trade associations in the matter of freight charges on railways and on other cognate matters. Its office is located in Madras. It deals only with freight rates and has mandatory jurisdiction. It consists of a President and two members. To assist the Tribunal, two panels of assessors are constituted, one representing trade, industry and agriculture and the other, the railways.

Railway Service Commissions—are at Bombay, Calcutta, Allahabad and Madras for the purpose of recruitment of railway personnel. Each Service Commission has a Chairman, a Secretary with a secretariat and one or two members.

Efficiency Bureau—has been set up mainly to investigate problems having a bearing on the efficiency of the railways in various facets of working and to suggest ways and means of securing improvements in efficiency.

Central Clearing House—There is a Clearing Accounts Office at Delhi, whose main function is to allocate inter-railway revenue and expenditure under various heads to different railways.

Central Board of Railway Research—Consisting of eminent scientists, engineers and industrialists, has been set up to advise on the programme of research and development of the railway organizations and to ensure co-ordination between other sister institutions and manufacturers.

RAILWAY FACTS

There are 7,079 railway stations in India.

* *

Daily, the Indian Railways carry about 70 lakhs passengers

* *

India has 3 Gauges of railway track—Broad Gauge (5'-6"), Metre Gauge (3'-3⅜") and Narrow Gauge (2'-6" and 2'). The total route kilometreage by gauge was as follows: Broad Gauge—27,459, Metre Gauge—25,142, Narrow Gauge—4,982.

* *

The railway station with smallest letters is 'IB' railway station on the South-Eastern Railway between Jharsuguda and Brajarajnagar in Orissa.

* *

The longest railway tunnel in India is the Torsi Tunnel, ¾th of a mile long.

* *

The longest railway platform in India as well as in the world (2,733 ft.) is at Kharagpur station in West Bengal.

* *

The longest railway bridge, the Sone Bridge, is 10,052 ft. long and has 95 spans, each 100 feet apart.

* *

The Railways are the largest employers in the country.

* *

Civil Aviation

ORGANIZATIONAL SET UP—Department of Civil Aviation is in the Ministry of Tourism and Civil Aviation. The Secretariat of the Ministry is headed by a Secretary, who is assisted by a Jt. Secretary, a Deputy Secretary and 5 Under Secretaries. In the field of civil aviation, while the operation of air transport is entrusted to two Public Undertakings, namely, Air-India for international services and the Indian Airlines Corporation for domestic services and services to neighbouring countries like Afghanistan, Nepal, Burma, Bangladesh and Sri Lanka, the regulatory functions and the provision of the required infra-structure for civil transport operations are provided by the Directorate General of Civil Aviation. The broad lines of activity of this Directorate generally are: (i) construction, maintenance and management of terminal buildings, runways aprons etc. of civil aerodromes, (ii) provision of navigational aids and communication facilities to civil air transport, (iii) enforcement of air transport regulations including safety requirements such as certification of air-worthiness of aircraft, licensing of pilots, navigators and other air-crew and regulation of air traffic, (iv) enquiries into air accidents as also into incidents related to safety of aircraft.

The two Corporations, viz., India Airlines and Air-India came into existence on 15th June, 1953.

The **Indian Airlines Corporation** provides service within India and also to the neighbouring countries. IAC operates more than 100 flights per day.

Air-India is one of the few airlines in the world to have an all-jet fleet.

INDIAN NON-SCHEDULED AIR TRANSPORT SERVICES—Airways (India) Ltd., Air Survey Co. of India (P) Ltd., Bharat

Commerce and Industries Ltd., Kalinga Airlines (P) Ltd., Jamair Co. (P) Ltd., Cambata Aviation (P) Ltd., and Kasturi & Sons Ltd.

TRAINING CENTRES AND FLYING CLUBS—The Central Government is running the Civil Aviation Training Centre at Allahabad, which comprises of the aerodrome and the communication school and which trains pilots, aerodrome officers, control officers, fire operators, radio operators and technicians.

There are 25 subsidised flying clubs in India, with their headquarters at Bangalore, Baroda, Hyderabad, Bombay, Behala (Calcutta), Ludhiana, Coimbatore, N. Delhi, Madras, Nagpur, Patna, Patiala, Gauhati, Banasthali Vidyapith, (Rajasthan), Lucknow (with branch at Kanpur), Jamshedpur, Karnal, Indore (with branch at Bhopal), Jullundur Cantt., Jaipur, Trivandrum, Bhubaneswar, Raipur, Hissar and Amritsar. Hind Flying Club and M. P. Flying Club each has a branch at Kanpur and Bhopal respectively.

There is a Departmental Gliding Centre at Poona and 13 subsidised Gliding Clubs at New Delhi, Ranpur, Agra, Patiala, Jullundur Cantt., Hissar, Pilani, Nasik, Jaipur, Amritsar, Patna, Kanpur and Ahmedabad.

AERODROMES—There are 85 aerodromes controlled and operated by the Civil Aviation Department. 4 aerodromes at Calcutta (Dum Dum), Bombay (Santa Cruz), Madras (Meenambakam) and Delhi (Palam) are international airports.

Major aerodromes are: Agartala, Ahmedabad, Amritsar, Begumpet, Delhi (Safdarjang), Gauhati (Barjhar), Jaipur, Lucknow, Nagpur, Patna, Tiruchirapalli and Varanasi. There are also 38 intermediate and 32 minor aerodromes.

The aerodromes at Ahmedabad, Patna, Bombay (Santa Cruz), Calcutta (Dum Dum), Delhi (Palam), Madras (Meenambakam), Tiruchirapalli, Varanasi, Port Blair, Trivandrum and Amritsar have been declared customs aerodromes.

AIR TRAFFIC CONTROL—As a member of the International Civil Aviation Organisation, India has to meet the standards laid down by that organisation. So Air Traffic Control Organisation has been established for the maintenance of air traffic control services for international aircraft landing and passing through the country as well as internal air services. The Traffic Control Organisation is responsible for the safety and control of aircraft in the air and on the ground. For this purpose, the country has been divided into 4 regions.

AIRCRAFT MANUFACTURE—The **Hindustan Aircraft Ltd.**, at Bangalore, which was started as a repair, overhaul and assembly depot, has now grown into an important manufacturing plant. The factory, founded in 1940 as a private company, came under the complete management of the Government of India in 1945. Today, the factory is a self-sufficient establishment with several sections. It undertakes repair and overhaul work for overseas customers.

An outstanding achievement of the factory is the designing and manufacture of a trainer aircraft named HT-2 in 1952. This marked the beginning of aircraft production in India. The manufacture of modern light jet fighters is the latest venture of the factory. India's first supersonic fighter, HF-24 successfully took to air on its probing flight at Bangalore on 24th June, 1961 (See also Index).

The Research and Development Directorate of Civil Aviation Department has designed and developed a prototype light aircraft Revathi-1 at its technical centre in New Delhi, which made its maiden flight on Jan. 13, 1967.

Meteorological Affairs

INTRODUCTION—The meteorological Affairs in the country are dealt with by the Indian Meteorological Department of the Government of India. The Department was instituted in 1875 to co-ordinate, combine and extend the work of various provincial meteorological organisations which had been established between 1865 and 1871. Before 1865 the provincial authorities asked administrative or medical officers in districts to note temperatures, pressures and rainfall but there was no arrangement to collect the records systematically and to turn the data to account. Observations of value were however kept at a few observatories of first rank On the recommendations of the inquiry committee appointed by the Government of India in connection with the 1875-76 famine in the Madras Presidency, the Government of India decided on a scheme of reorganisation of the Indian observatories, which included the transfer of the Magnetic Observatory at Colaba and the Astronomical Observatory at Madras from provincial to central control and establishment of a Solar Physics Observatory or the systematic examination and study of the changes in progress in the Sun and their co-relation with the larger feature of Indian Meteorology. By

March 1898, work in solar physics began at Kodaikanal, which was chosen for the location of the proposed Solar Physics observatory.

ORGANISATIONAL SET UP—The Head of the Department is the Director General of Observatories who is assisted by four Deputy Director General viz. Deputy Director General (Administration), Deputy Director General (Instruments), Deputy Director General (Climatology and Geophysics), and Deputy Director General (Forecasting). The headquarters of the Director General of Observatories is located at New Delhi. The headquarters of the Deputy Director General (Administration) and the Deputy Director General (Instruments) are also located at New Delhi while those of the Deputy Director General (Climatology and Geophysics) and the Deputy Director General (Forecasting) are located at Poona. For efficient control of observatories and for provision of meteorological service throughout the country, India is divided into five regions, each under a Regional Director, with headquarters at Bombay, Calcutta, Madras, Nagpur and New Delhi.

Meteorological Services are rendered to :

(1) Aviation.
(2) Defence services.
(3) Shipping, ports and fishing craft.
(4) Inland warning are issued for adverse weather.
(5) Services to agriculture: Farmers' Weather Bulletins containing forest for next 36 hours with further "outlook" for subsequent 2 days, are issued for broadcast daily.
(6) Weather services to public : All-India Daily Weather Reports from Poona and Regional Daily Weather Reports from Bombay, Calcutta, Madras, Nagpur, and New Delhi are issued.
(7) Mountaineering expeditions, survey and pilgrimage parties.

Observational Organisation—consists of : Surface Observatories 489 ; Hydrometeorological Observatories 322 ; Pilot Balloon Observatories 55 ; Radiosonde Observatories 19 ; Radiowind Observatories 24 ; Radiation Observatories 30 ; Storm Detecting Radar Stations 10 ; Ozone Observatories 5 ; Atmospheric Electricity Observatory 1 ; Sferics Observatories 3 ; Seismological Observatories 32 ; Ionospheric Observatory 1 ; Astrophysical Observatory 1 ; Time Signal Station 1 ; Geomagnetic Observatories 4 ; Satellite Picture Recording Station (APT equipment) 5 ; Agro-met Observatories 122 ; Cyclone Warning Radar Stations 2.

Training and Research—The Training Section at Poona provides training in meteorology to the departmental and extra-departmental candidates at the Elementary, Intermediate, and Advanced levels. Being a scientific department, research, programmes and studies in meteorology and other subjects like astrophysics, geo-magnetism and seismology which form part of the scientific activities of the Department, receive growing attention and importance. In addition to whole-time research carried out at the Institute of Tropical Meteorology at Poona, research studies form an important element of the activities of other departmental offices also. **The Institute of Tropical Meteorology**, Poona has been established with the assistance from the U.N. Special Fund. The first four divisions of this Institute, viz., (i) Forecasting Research, (ii) Climatology and Hydrometeorology, (iii) Physical Meteorology and Aerology and (iv) Instrumental and Observational Techniques have been established. Studies are carried out at the Institute on ocean waves, monsoon rainfall, atmospheric turbulence and aircraft performance, mountain waves, jet streams, meteorology and supersonic flight, storm surges, solar radiation etc. **The Indian Institute of Astrophysics**, Kodaikanal—is engaged in research in all branches of astrophysics, particularly solar physics, stellar physics and radio astronomy. **The Indian Institute of Geomagnetism, Bombay**—with its headquarters at Colaba, together with the Primary Magnetic Observatory at Alibag and the two Field Magnetic Observatories at Annamalainagar and Trivandrum continue its activities. **The International Meteorological Centre**, Bombay which was established on 1st January 1963, was wound up in May 1966 with the termination of International Ocean Expedition. Most of its functions have been taken over by the **Indian Ocean and Southern Hemisphere Analysis Centre**, Poona. In addition to the above, small whole-time research units are functioning at 5 Regional Centres—New Delhi, Calcutta, Nagpur, Bombay and Madras.

Seismology—The Directorate of Seismological Organisation in India continues to function at the Headquarters Office at Delhi. It is responsible for co-ordinating the seismological work in the country The Central Seismological Observatory at Shillong continues the work of determination of earthquake epicentres from the data received from Indian observatories.

Hydrometeorology—Service in the field of hydrometeorology are rendered to the Central Water and Power Commission and to the engineers connected with various river valley and flood control projects. Units function for this purpose at New Delhi, Poona and Calcutta.

Geo-magnetism—The Colaba Observatory, together with the primary magnetic observatory at Alibag and the two field magnetic observatories at Trivandrum (Kerala) and Annamalainagar (Tamil Nadu), continue their activities in geo-magnetism.

Atmospheric Electricity—Measurements of electrical potential gradient at the surface are conducted at New Delhi, Poona and Calcutta.

Sferics—The stations at Sriniketan (W. Bengal), Nagpur and New Delhi continue to record the direction of arrival of atmospherics associated with thunderstorms.

Ozone—Measurements are continued at New Delhi, Dum Dum (W. Bengal), Kodaikanal (Tamil Nadu), Varanasi (U.P.) and Srinagar (Kashmir) for determining the total amount and vertical distribution of ozone in the atmosphere.

Astrophysics and Astronomy—The Astrophysical Observatory at Kodaikanal continues its work in the field of Solar Physics, Stellar Physics and Radio Astronogy.

International Collaboration—This Department continues to take active part in the activities of the World Meteorological Organisation and the International Civil Aviation Organisation. A Supplementary Meteorological Office of this Department continues to function at Kathmandu (Nepal).

Radio-Meteorology—During 1969-70, one weather radar and one wind finding radar were installed at Begumpet airport and Goa Observatory, respectively.

Satellite Meteorology—The Department has one station, located at Colaba, Bombay, for receiving televised pictures from meteorological satellites.

Hydrometeorology—During 1969-70, 133 Hydrometeorological Observatories were functioning under the Kosi and Flood Control Scheme.

Agricultural Meteorology—There are 122 Agromet Observatories.

Radiation—A network of 24 radiation stations are functioning in the country under the technical control of the Central Radiation Laboratory at Poona.

INSTITUTE ... WOMEN, Deptt. of Extension Services. CALCUTTA-27

Tourism

TOURISM ORGANISATION:—Since 1949, considerable attention has been given to the Tourist Development in India. The Department of Tourism, under the Ministry of Tourism and Civil Aviation deals with all matters concerning tourism. The activities of the Ministry are:

(1) Tourism, including public sector hotels, (2) Civil aviation, including the two Air Corporations, (3) Meteorology and (4) Railway safety.

The Department of Tourism which deals with problems concerning promotion of tourism in India, is under the charge of a Director-General, who is also ex-officio Joint Secretary to the Government of India and has 8 main sections—Travel Trade and Promotion, Publicity, Planning, Hotels, Training, Complaints Statistics and Statistics, and Administration.

INDIA TOURISM DEVELOPMENT COUNCIL—was incorporated on 31st March, 1965. It is the principal advisory body on matters relating to Tourism. It is presided over by the Union Minister of Tourism and Civil Aviation and is composed of Ministers in charge of Tourism in the States and Union Territories, Members of Parliament, members of the public representatives of the concerned Ministries/Departments of the Central Government, other segments connected with tourism, big hotels and travel trade. The Council recommends measures to be taken by the Central and State Governments for the promotion and development of tourism to and within India. It meets normally once a year.

INTERNATIONAL CONTACTS: The Department of Tourism is a member of the following international tourist promotion organisations—

(1) International Union of Official Travel Organisation (IUOTO), (2) IUOTO's Regional Travel Commission for South Asia (SATC), (3) Pacific Area Travel Association (PATNA), (4) American Society of Travel Agents (ASTA), (5) Universal Federation of Travel Trade Association (UFTTA).

INDIA TOURISM DEVELOPMENT CORPORATION LTD.—was set up on 1st Oct. 1966. The total paid up capital of the Corporation as on 31st December, 1969 was Rs. 1,87,91,000. The activities of this corporation include the construction of hotels, management of tourist bungalows and canteens, providing of transport facilities for tourists, production of tourist publicity and promotional material, sponsoring and organising of entertainment programmes for tourists and operation of duty-free shops at international air/seaports.

Labour

ORGANISATIONAL SET-UP—Labour being a concurrent subject, both the Central and the State Governments are competent to enact and administer labour laws The Central Government generally lays down policy for the whole country, while its implementation is mostly the responsibility of the State Governments. However, labour employed in railways, major ports, mines, oilfields, banking and insurance companies comes directly within the purview of the Central Government. The activities in the field of employment and training are also conducted by the Central Government.

Under the Indian Constitution, the following subjects may be legislated concurrently by the Central State Legislatures—(1) Trade Unions, industrial and labour disputes ; (2) Social Security and Social Insurance, employment and unemployment ; (3) Welfare of labour, including conditions of work, provident funds, employers' liability, workmen's compensation, invalidity and old-age pensions, maternity benefits ; (4) Vocational and Technical Training of labour ; (5) Relief and Rehabilitation of refugees.

EXPERT COMMITTEE ON UNEMPLOYMENT—was formed with Mr. B. Bhagwati as its Chairman. The Committee submitted its final report in May, 1973. It has recommended a Rs. 2000-crore programme for providing direct employment during the next two years to over 4 million rural unemployed.

The committee has suggested that the Government provide Rs. 200 crores from the budgetary resources, Rs. 200 crores from the financial institutions and that Rs. 180 crores be invested by the people living in rural areas on developing housing programmes.

The committee has also recommended the imposition of certain new levies to raise additional resources for financing employment-oriented programmes These include the levy of an employment surcharge on all incomes, corporation taxes, levy on commercial advertisements, and an integrated income-tax on both agricultural and non-agricultural incomes.

The committee listed some of the major schemes which included rural electrification, multiple cropping, rural housing, development of roads and inland water transport, which would generate basic wealth to provide direct employment to about four million people during the next two years besides giving indirect employment to several hundred thousand more.

UNION ADMINISTRATION—The activities of the Government of India regarding labour is controlled by the Ministry of Labour. The Ministry deals with the following subjects: (i) Labour Welfare ; (ii) Industrial and Labour Disputes ; (iii) Labour ; (iv) Unemployment Insurance and Health Insurance, etc ; (v) Labour employed in railways, major ports, mines and oilfields ; (vi) Resettlement of demobilised soldiers and discharged war workers ; (vii) Participation in the International Labour Conferences and work connected therewith.

As regards subject (i) to (iv), the Ministry is only responsible for laying down the general policy for the whole of India, while the implementation of the policy relating to these subjects is entirely the responsibility of the State Governments concerned, though the Central Government has powers to exercise control and give direction.

The following are the attached offices of the Ministry:—

(1) **Office of the Director-General, Employees State Insurance Corporation, New Delhi**—is a quasi-Government institution to administer the Employees State Insurance Act. It has a network of regional offices throughout the country.

(2) **Office of the Director, Labour Bureau, Simla**—is responsible for the collection and compilation of labour statistics, maintenance of working class consumer index number, keeping up-to-date factual data relating to working conditions, conducting research into specific problems etc.

(3) **Office of Director-General of Employment and Training**—was set up in 1945, to assist the demobilised personnel in their resettlement in civil life from the army. After some time, the scope and activities of this office were extended to various other categories.

(4) **Office of the Chief Labour Commissioner, New Delhi**—deals with (a) conciliation, (b) examination of welfare measures and advice to the employees and the Government in connection therewith, (c) operation of labour laws to the extent of general responsibilities, (d) organisation and setting up of canteens in all Government under-

takings, besides offering advice to the State Governments and Administrations. There are 6 regional offices under the control of the Chief Labour Commissioner.

(5) **Office of the Coal Mines Welfare Commissioner, Dhanbad**—deals with (i) the administration of Coal Mines Labour Welfare Fund Act, 1947 and (ii) the administration of the Mica Mines Labour Fund Act, 1946.

(6) **Office of the Chief Inspector of Mines, Dhanbad**—The activities of this office are: (1) enforcement of the Mines Act of 1952, (ii) inspection of mines, (iii) investigation of accidents, (iv) inspection of electrical installation and machinery, (v) technical advice to mine-owners, (vi) prosecutions, (vii) collection of statistics and (viii) enforcement of the Maternity Benefit Act, 1961.

(7) **Office of the Chief Adviser of Factories, New Delhi**—deals with (a) training of Factory Inspectors and Safety Officers, (b) industrial health, survey of toxic hazards, (c) environmental problems in factories, (d) studies relating to productivity and work methods, (e) housing of industrial labour and administration of safety measures, (f) Health and Welfare Schemes under the Dock Workers (Regulation of Employment) Act, (g) assistance in all matters relating to the working conditions, (h) collection of up-to-date information in respect of safety, health and welfare of industrial workers.

(8) **Office of the Controller of Emigrant Labour, Shillong**—deals with (a) interpretation of the Tea District, Emigrant Labour Act, 1932 of tea gardens and depots, (b) compensation cases relating to persons belonging to provincial Civil Labour units and State Labour units who worked on Defence projects.

(9) **Office of Welfare Commissioners, Mica Mines Labour Welfare Fund, Dhanbad and Nellore.**

(10) **Office of the Coal Mines Provident Fund Commissioner, Dhanbad**—was set up in 1948, for (a) administration of Coal Mines Bonus Scheme and (b) administration of Coal Mines Provident Fund Scheme which was formed under Coal Mines Provident Fund and Bonus Scheme Act, 1948.

(11) **Office of the Central Provident Fund Commissioner, New Delhi**—is responsible for the collection of amounts due to the Fund from employers and the payment of claims due to workers.

(12) **Institution of Work Study, New Delhi**—was inaugurated on 31st August, 1963, to promote full use of work study to bring about increased efficiency in national development.

TRADE UNIONISM IN INDIA

Trade Unions Act of 1926 conferred a legal and corporate status on registered unions and granted them certain immunities in regard to trade disputes. The Act makes provisions for three matters—(1) conditions governing the registration of trade unions, (2) the obligations to which a trade union is subjected after registration and (3) the rights and privileges accorded to registered unions to be used for the conduct of trade disputes and for the provisions of benefits to its members.

The amended Act of 1947 contains a provision for compulsory recognition of representative unions by employers. The redeeming feature of the Act is that Labour Courts are to be appointed to hear and decide disputes arising from the refusal of employers to recognise any particular union. The Act specifies certain acts as unfair practices on the part of recognised unions and certain other acts as unfair on the part of employees. It also declares as unfair practice for an executive of a union to instigate a strike and unfair for a majority of members to take part in an irregular strike.

There are at present 9 central all-India trade union organisations in India: Indian National Trade Union Congress, All-India Trade Union Congress, Hind Mazdoor Sabha, United Trade Union Congress, Centre of Indian Trade Unions, Bharateeya Mazdoor Sangh, Labour Progressive Federation, National Front of India Trade Unions and Indian Federation of Independent Trade Unions. AITUC having become manifestly Communist since December 1929, the Indian National Congress leaders organised their own trade union—the INTUC. The Praja Socialist Party organised tre HMS, CPI(M) has made a separate centre, the CITU in 1970. BMS was started in 1955.

Though the five national organisations dominate the Indian trade union movement, not all trade unions in India belong to them or follow their leadership. A very large number of small unions stand aloof from their leadership. The striking examples of these are Ahmedabad Textile Labour Association and National Federation of Indian Railwaymen. The United Trade Union Congress have no political affiliations.

LABOUR WELFARE

Standing Mines Safety Equipment Advisory Board was set up in June 1963 and is composed inter alia of representatives of mine owners, mine managers, mine workers and the Government Departments concerned. The functions of the Board are: (a) to make annual assessments of future requirements of mine safety equipment and material ; (b) to review the position regarding import of such equipment and materials ; (c) to keep track of the progress of indigenous production of such equipment and material and (d) generally to advise on the availability of mine safety equipment.

National Council for Safety in Mines was set up on July 11, 1963, to promote safety education and propaganda in mines. It includes representatives of mine owners, workers and mine managers.

Coal Mines Labour Welfare Fund was established in 1944, for improving the living and social conditions of workers in the coal mining industry.

Dock Workers (Regulation of Employment) Schemes framed under the Dock Workers (Regulation of Employment) Act, 1948 are at present in operation in the major ports of Bombay, Calcutta, Cochin, Madras, Mormugao and Visakhapatnam. These schemes seek to regulate the employment of certain specified categories of stevedore labour. These schemes are administered by Dock Labour Boards which are tripartite bodies consisting of an equal number of representatives of (i) Central Government, (ii) Dock Workers and (iii) the employers of Dock Workers and Shipping Companies.

Mica Mines Labour Welfare Fund provides medical, educational and recreational facilities for mica mine workers.

Under Plantations Labour Act, 1951, all plantations are required to provide housing accommodation to the workers and their families in their residential quarters and to maintain hospital or dispensaries. Most States and Union Territories are running a number of welfare centres.

Motor Transport Workers Act, 1961 provides for the welfare of motor transport workers and regulates the condition of their work.

Iron Ore Mines Labour Welfare Cess Act, 1961 provides for the levy and collection of a cess for promoting welfare of the labour employed in this mining industry. It came into force from Oct. 1, 1963.

Safety measures in mines are undertaken under the Mines Act, 1952 and the rules, regulations and bye-laws made thereunder. This Act provides for the regulations of labour and safety in Mines.

Labour Commission—The National Commission of Labour, appointed in December 1966, consists of 12 members besides the chairman and member-secretary. The Commission includes 4 independent members, one of whom is an economist, and four each to represent employers and workers.

The Commission was expected to review the existing legislative and other provisions intended to protect the interests of labour, to assess their working and to advise how far these provisions served to implement the Directive Principles of State Policy as embodied in the Constitution and the national objective of establishing a socialist society and achieving planned economic development.

The Commission would, in particular, study and report on matters like the levels of workers earnings, arrangements for social security, industrial relations and measures for improving the conditions of rural labour.

WAGES

The regulations of wages is governed by the Payment of Wages Act, 1963 and the Minimum Wages Act of 1948. The former Act applies to persons employed in any factory as defined by the Factories Act, 1948 and in any railways, and in receipt of wages which average below Rs. 400 a month.

Minimum Wages Act, 1948 empowers the appropriate Government to fix minimum rates of wages payable to employees in industries specified in the Schedule.

Wages Census Scheme has been formulated for envisaging collection of occupational wage rates and earnings data in respect of workers in major factories, mining and plantation industries.

WAGE BOARDS

In the organised industries wages are determined mainly through tripartite wage boards. The following table gives the names of the various Wage Boards set up so far:

Cotton Textiles, Cement, Sugar (1st Wage Board), Jute, Iron and Steel, Coffee Plantations, Tea and Rubber Plantations, Non-Journalist Employees of Newspapers, Working Journalists, Iron Ore Mining, Limestone and Dolomite Mining, Coal Mining, Second Wage Board for Cement Industry, Heavy Chemicals and Fertilizers, Cotton, Textiles, Engineering, Port and Dock Workers, Leather Goods Industries, Road Transport and Electricity Undertakings and Second Wage Board for Sugar Industry.

INDUSTRIAL RELATIONS

The Central Government have framed model rules under the Industrial Employment (Standing Orders) Act, 1946 for adoption by industrial establishments employing 100 or more workers. The Act, as modified in 1961, inter alia, empowers the appropriate Government to extend its provision to establishments employing less than 100 workers.

A Code of Discipline has been drawn up to avoid breaches of the Code by settling the disputes between employers asd workers by constitutional methods rather than by direct actions.

The Central Evaluation and Implementation Division persuades the parties to withdraw the cases pending in higher courts or the Supreme Court. The Central Employers and Workers Organisation have set up committees for dissuading their affiliate members from filing appeals in higher courts against judgments of Industrial Tribunals or Labour Courts.

There are 7 Industrial Tribunal-cum-Labour Courts at present for dealing with disputes in the Central sphere. Of these, 3 are located at Dhanbad, 2 at Bombay and one each at Calcutta and Jabalpur. The Industrial Tribunal-cum-labour Court at Delhi which is under the Delhi Administration also deals with some cases in the Central sphere.

There is one whole-time Central Labour Court at Dhanbad. The Labour Courts set up by the State Governments/Administrations, except those in Goa, Daman and Diu, Bihar, West Bengal, Manipur and Tripura have also been specified as Labour Courts for the determination of the money-value of benefits under the Industrial Disputes Act, 1947. The State Government/Administration Labour Courts at Delhi, Calcutta, Quilon and Bangalorè have also been specified as Labour Courts for dealing with question relating to the application or the interpretation of certified standing orders under the Industrial Employment (Standing Orders) Act, 1946.

Under Industrial Disputes Act, 1947, 893 Workers Committees in the Central undertaking are now functioning.

Tripartite Machinery at the Centre mainly consists of the Indian Labour Conference, the Standing Labour Committee, the Industrial Committees and the Committee on Conventions. These is also the Labour Minister's Conference which is closely associated with the machinery, though not tripartite in character.

Conciliation Machinery—The administration of Industrial relations in the Central sphere undertakings rests with the Chief Labour Commissioner.

Workers' Participation in Management—The scheme of workers' participation in management has made some progress. Joint Management Councils are functioning in 80 establishments—31 in the public sector and 49 in the private sector. Over 1,500 units in the country have implemented the scheme of workers participation in management at the shop floor level. According to the Ministry of Labour, 472 Central establishments and over 1,000 units in the States have adopted the scheme.

In the public sector, the scheme covers 247 units in the mining industry, 188 in the manufacturing and 37 departmental undertakings like Defence, Posts and Telegraphs and Railways.

In several public undertakings, the scheme has helped increase production and efficiency.

In the States, the scheme has been implemented in units employing less than 500 workers.

The scheme was introduced in October, 1975, to improve industrial relations.

The National Apex Body has recommended that the National Industrial Committee and the State apex organizations should ensure the implementation of the scheme in all units.

SOCIAL SECURITY

Employees State Insurance Act of 1948 applies to all perennial factories using power and employing 20 or more persons and covers labourers and clerical staff with monthly earning up to Rs. 400, E.S.I. now covers 43.13 lakhs employees at 456 centres. Medical care is given to 184.48 lakhs at 295 centres.

The Corporation has so far constructed and put into use 57 full-fledged hospitals with 9,204 beds, 25 Annexes with 458 beds and 163 dispensaries. In all 10,147 beds were available for the use of insured persons and their families.

Minimum Wage Act of 1948 provides for fixing minimum rates of wages in certain employment. Wages mean all remuneration, capable of being expressed in terms of money, but does not include the value of (a) any housing accommodation, supply of light, water medical attention, etc., or (b) any other amenity or any service excluded by general or special order of the appropriate Government.

Employees Provident Fund Act, 1952, which was originally applied to 6 major industries to provide for the benefit of compulsory provident fund to industrial workers, now covers 139 industries and establishments. The Act applies to such factories and establishments in the industries as have completed three years of existence, where the employment strength is 20 or more but less than 50 persons. At the end of September, 1974 the membership of the fund was 71.35 lakhs. The total provident fund contributions collected stood at Rs. 3124.90 crores at the end of September, 1974.

The Delhi Relief Fund was set up in January 1964 to afford financial help to the heirs of deceased members of unexempted establishments so that a minimum of Rs. 500 was assured to them. The limit was raised to Rs. 750 on Aug. 1, 1969.

Coal Mines Provident Fund Schemes, 1948 framed under the Coal Mines Provident Fund and Bonus Schemes Act, 1948, applies to all coal mines in India. Both the employees and the employers are to contribute a compulsory 8 p.c. of the total emolument of the employees. The total number of coal mines and ancillary organisations covered under the Scheme was 1,166 at the end of 1974. The actual number of members subscribing to the Fund as on 31st December, 1974 was 4,84,702.

A Scheme of Family Pension-cum-Assurance applicable to members of the Employees' Provident Fund and the Coal Mines Provident Fund was introduced during 1970-71.

Legislaton regarding the payment of maternity benefits is in operation in almost all the States. Two Central Acts—the Employees' State Insurance Act, 1948 and the Plantation Labour Act, 1951, also regulate payment of maternity benefits. The Maternity Benefit Act, 1961 was enacted to provide uniform standards for maternity protection.

Workmen's Compensation Act, 1923, as amended in 1962, raised the wage limit for the coverage of compensation under the Act from Rs. 400 to Rs. 500 and revised the rates of compensation.

Gratuity—The Payment of Gratuity Act, 1972 provides for the payment of gratuity to employees drawing Rs. 1,000 or less per month as wages. The Act is applicable to factories, mines, oilfields, plantations, ports, railway companies, every shop or establishment employing 10 or more persons and covered by any of the State Shops and Establishments Act. The qualifying period of service for entitlement to gratuity is 5 years except in cases of death or disablement due to accident or disease.

Bonus—The Payment of Bonus Act, 1966 was amended on 11th September, 1974 providing for payment of minimum bonus of 8⅓ per cent for the accounting year commencing on any day in 1973 and to deposit in certain cases the excess amount of bonus in the provident fund account of the beneficiaries.

TRAINING AND EDUCATION—Workers' Education—The **Central Board for Workers' Education**, consisting of representatives of the Government, both Central and State organisations of employees and labours, and educationists, is a registered body which implements training of top-level instructors, teacher-workers and workers. The Institute of Workers Education. It started functioning from March 1970 and is intended to provide regular training programmes and refresher courses for Education officers, Trade Unionists and others. All the important industrial centres are now covered by a network of 30 Regional and 83 Sub-Regional Centres. the workers education scheme in three distinct phases, namely, the Board has set up a training wing at Bombay known as the Indian

The Indian Institute of Labour Studies, set up in September 1964, has been imparting in-service training to the officers of the Central and State Governments as well as of the public sector undertakings.

The Central Labour Institute and the three Regional Labour Institutes at Calcutta, Kanpur and Madras have been constituted to conduct training programmes on industrial safety and hygiene, productivity supervisory development and related subjects.

A National Institute for Labour Research has been set up to undertake research on labour matters.

The National Labour Institute has been set up by the Union Ministry of Labour on 1st July, 1974.

A National Council for Training in Vocational Trades has been set up to advise the Government of India on all questions of training policy, to co-ordinate vocational training and to lay down uniform standards.

Productivity Centre of the Central Labour Institute—The objective of the centre is to create an attitude receptive to the idea of productivity and to further the application of modern industrial engineering techniques for raising productivity and improving conditions of work.

INDIA AND THE I.L.O.

India has been an active member of the I.L.O. from its very inception in 1919 and is a permanent member of its governing body since 1922 and also a prominent members of the organisation as one of the ten leading industrial countries of the world.

India has been receiving technical assistance from the I.L.O. since 1951 in the following fields—(a) Social Security, (b) Training-within-industry, (c) Vocational Guidance, (4) Employment Services, (e) Productivity.

NATIONAL EMPLOYMENT SERVICE

Employment Exchanges originated in India during World War II to resettle demobilised personnel. They were entrusted with the task of finding employment for displaced persons. The Exchanges now render employment assistance to all grades and categories of employment seekers. The Exchanges are run by the Ministry of Labour. The activities of the Directorate are divided into two parts—Employment and Training Schemes.

The Employment Exchanges are under the control of the State Governments since November 1956. The Central Government has now limited their responsibilities to policy-making, co-ordination of procedure and standards and to rendering of assistance, whenever needed. There were 535 Exchanges in December 1974. The Employment Exchanges (Compulsory Notification of Vacancies) Act of 1960 makes it compulsory for employers usually employing 25 or more workers, to notify their vacancies to the Exchanges.

A **Central Committee on Employment**, constituted in 1958, advises the Government of India on problems of employment, creation of employment opportunities and the working of the National Employment Service.

Minerals

MINERAL RESOURCES—The mineral resources of India, though limited are by no means inconsiderable and encompass a sufficient range of products that are necessary to make a modern civilised country. The minerals of strategic defence importance may be regarded to a considerable extent as adequate, though there is a serious deficiency in some key minerals, such as tungsten, tin, mercury, sulphur and petroleum. But in the basic metals—iron, manganese, aluminium, magnesium, chromium, and in coal fuel, the country is well-supplied. India's resources in the highly strategic atomic minerals—uranium, thorium, zirconium, and lithium—are sufficient. In the case of thorium, the reserves are of considerable magnitude. In uranium, enough reserves have been known to give present self-sufficiency for industrial power generation.

The reserves of all types of coal occurring in seams of 0.3 metre or more in thickness within the depth of 609 metres are estimated at 1,21,360 million tonnes.

The iron ores reserves in India, assessed at one-fourth of the total world reserves, are estimated at 22,400 million tonnes.

The potential oil-bearing areas in India aggregate about 10,35,920 sq. kms. This is tentative estimate.

Chromite occurs mainly in Bihar, Orissa, Karnataka, Tamil Nadu and Maharashtra. The total reserves, provided and probable, have been estimated at 48 lakh tons.

Lignite deposits in Tamil Nadu. Rajasthan, Gujarat and Kashmir are estimated at 213 crore tons.

Manganese deposits of India are estimated to be 180 million tonnes, the third largest in the world.

The deposit of bauxite is widespread in India. Of the total estimated reserves of 131 million tonnes, 79 million tonnes are of high grade bauxite.

Nickel ore deposits, estimated at about 15 million tonnes, were located in the Kansa East Block under the Sukinda tehsil of Cuttack district in Orissa. Existence of nickel-bearing zones has also been indicated in Balarampur and Nawana sectors of the Mayurbhanj district in Orissa.

Other known mineral resources of India are—chromite: 3 million tonnes; gold (ore): 4.4 million tonnes; ilmenite: 300 million tonnes; gypsum: 1,130 million tonnes. The proved reserves of gold ore in Kolar Goldfields of Karnataka are 37 lakh tonnes while those in Hutti gold mines in Raichur district are 5 lakh tonnes. Gold occurs also at Ramgiri in Andhra Pradesh.

Among the refractories, there are deposits of 58 million tonnes of manganesite; deposits of kyanite, sillimanite and corundum also exist in different parts of the country.

A rich deposit of rock phosphate is located in as many as twelve places, from Ichagarh (about 6 miles from Jamshedpur) to Ghatsila in Bihar. The entire length of the rock phosphate deposit is about 42 miles in a scattered way. Collectively these deposits are expected to go for a minimum period of 30 years.

As a result of the investigations conducted by the Geological Survey of India, reserves of about 10.6 million tonnes of nickel ore in Orissa, 64 million tonnes of copper ore in Rakha mines-Roam-Sidheswar belt in Singhbhum district, Bihar, and 5 million tonnes in Nalakunda and Dukunda blocks in Agnigundala belt, Andhra Pradesh, have been established. Sizeable deposits of bauxite, limestone, dolomite, iron ore. coal in Madhya Pradesh; clays and coal in West Bengal; graphite, kyanite and coal in Bihar; lead ore, manganese ore and chromite in Orissa and coal limestone and lead-zinc in Andhra Pradesh have also been located.

FOUR CATEGORIES OF MINERAL RESOURCES—The mineral resources of India can be divided into four categories: (1) minerals of which India's exportable surplus can dominate world market, (2) minerals of which the exportable surplus forms an important factor, (3) minerals in which it appears that the country is at present self-sustaining and (4) minerals for which India has to depend largely or entirely on foreign imports. To the first category belong iron ore titanium ore and mica, while the exportable surplus under the second head includes manganese ores, bauxite, magnesite, refractory minerals, natural abrasives, steatite, silica, gypsum, monumental granites, monazite, corundum and cement materials. In a number of minerals. namely, coal, aluminium ore, mineral pigments, sodium salts and alkalies rare earths, berylium, glass sand, nitrates, zircon and phosphates, the country is known to be self-sufficient. And lastly, the following are the minerals for which it has to depend on imports: copper, silver, nickel, petroleum, sulphur, lead, zinc. tin, fluorides, tungsten, molybdenum, platinum, graphite, asphalt and potash.

GOVERNMENT DEPARTMENTS—Following is a detailed list of the subjects which are at present handled by the Department of Mines and Metals.—

A. Administrations of the following offices :—

Geological Survey of India—was established in 1951. It is responsible for the preparation of the geological map of India which forms the basis of all geological works. The Department has been reorganised on a regional basis. Three regional directorates have been set up and functioning since 1961 : for the Eastern Region with headquarters at Calcutta, for the Northern Region with headquarters at Lucknow and for the Southern Region with headquarters at Hyderabad. Circle offices have also been set up under the three regions in all the States (See Index).

National Mineral Development Corporation Ltd.—was set up on 15th November, 1958. It undertakes the exploitation of minerals in the public sector excluding oil and natural gas and coal.

Mineral Exploration Corporation—was set up in Oct. 1972 to undertake detailed mineral exploitation. The authorised share capital of the corporation is Rs. 25 crores.

Indias Bureau of Mines—was created in 1948 with headquarters in Delhi to function as a body of export advisers to the Government of India on all matters relating to mineral development. The Bureau is the chief national agency for discharging the various duties under the Mines and Minerals (Regulation and Development) Act, 1958. It inspects mines to effect general improvement in mining methods, plans for the recovery of the largest possible quantity to conserve minerals wealth, eliminate waste in mining, processing and utilization, use modern methods of prospecting to locate mineral deposits.

A. **Mineral Advisory Board and Regional Mineral Advisory Councils**—were set up in 1953, to advise the Government on all matters concerning the mineral industry. It advises the Government on the export and import tariffs on minerals and mineral products. They are working on Kiriburu Iron Ore Project, Panna Diamond Mining Project, Khetri Copper Project, Bailadila Iron Ore Project, etc.

Neyveli Lignite Corporation Ltd.—envisages the mining of 3.5 million tonnes of lignite per annum, out of which 1.5 million tonnes are to be utilised in a thermal power station with an installed capacity of 25,000 kw. (See Index).

Coal Council of India—makes suggestions in regard to the co-ordination of the programme of transport, coal and power training of technical personnel and prospecting and drilling of areas from which coal will be raised in the Fourth Plan (See Index).

Coal Board —is a statutory body set up under Coal Mines (Conservation and Safety) Act, 1952. The important functions of the Coal Board are the promotion of measures for safety in coal mines and conservation of coal resources. (See Index).

Central Laboratories—There are three Central Laboratories—Petrological Laboratory for the identification of minerals and rocks, Palaeontological Laboratory for carrying research on vertibrate, and invertibrate fossils and Chemical Laboratory for carrying analytical experiments pertaining to various industrial materials, metallic minerals, water samples, etc.

MINING EDUCATION—**The Indian School of Mines and Applied Geology**, opened in 1928 at Dhanbad, imparts high-grade education in mineral engineering and applied geology. Besides the two main subjects, the curriculum includes detailed instruction in allied and subsidiary subjects, such as, clerical and mechanical engineering, chemistry, fuel technology, metallurgy and assaying, physics, mathematics, and foreign languages. The successful students are awarded the diploma of Associationship of the Indian School of Mines in mining, engineering or applied geology. The new curriculum lays special emphasis on subjects like metallurgy, fuel technology, refractories and ceramics. A new Faculty of Mining and Applied Geology has been established.

Other major institutions for imparting mining education in India are Banaras Hindu University, Varanasi ; Bengal Engineering College, Sibpur (W.B.) ; Indian Institute of Technology, Kharagpur (W.B.) and Osmania University, Hyderabad. All these institutions confer degrees upon the students. There are a few minor ones, viz. Asansol Polytechnic etc. (See also Education).

DESCRIPTION OF MINERALS

Coal—See Index.

Manganese—India rank third in the world in the output of this mineral. The total estimated reserve of this mineral is 18 crore tonnes. Its chief use is in the manufacture of steel. It is also extensively used in the chemical industry and in the making of dry cell batteries. Chief producing States are Madhya Pradesh, Gujarat and Maharashtra. The manganese mines of Madhya Pradesh contain some of the best-known manganese ore deposits of the world. Deposits now being worked are in Singhbhum (Bihar), Panchmahals (Gujarat), Nagpur, Balaghat, Bhandara, Chhindwara, Indore (M.P.), Visakhapatnam (A.P.), Sundar (Tamil Nadu), Shimoga (Karnataka), Bonai, Keonjhar, Koraput, Patna State (Orissa) and Banswara (Rajasthan), Madhya Pradesh produces two-thirds of the all-India production.

Lignite—in a soft brown type of coal, retaining the texture of wood from which it originated. From it are obtained a number of valuable products, such as petroleum and diesel oils, waxes and hydrocarbon gases. Lignite quarry is situated at Neyveli in South Arcot district of Tamil Nadu. It is 24 miles from Cuddalore and about 135 miles south-west of Madras. Lignite is also found in Rajasthan, Gujarat and Kashmir.

The **Integrated Neyveli Project** envisaged the mining of 3.56 million tonnes of lignite per annum to be utilised for the generation of thermal power, production of nitrogenous fertilizers in the form of urea and manufacture of carbonised lignite briquettes for use of domestic and industrial fuel.

Gold—is mined in Kolar in Karnataka State, from where 65 p.c. of India's gold comes. (See Bharat Gold Mines Pvt. Ltd.) India's production of gold is only about 2 p.c. of the total world production (excluding U.S.S.R.). The only other working mine, Hutti in Karnataka, produces small quantities of gold. Gold-bearing veins are also known to exist in Dharwar district of Karnataka, Anantapur district of Andhra, at Wynaad in Tamil Nadu and at Lowa in Manbhum district of Bihar. Alluvial gold is widely distributed in many parts of the country—Assam, Bihar, Kashmir, Madhya Pradesh, Orissa, Punjab, Uttar Pradesh and West Bengal.

Mica—Mica has been in use in India since a long time past. The important use was in Ayurveda. There are three mica belts in India ; 3,380 sq. km. in Bihar, 3,110 sq. km. in Rajasthan and 1,550 sq. km. in Andhra Pradesh. India supplies about 80 p.c. of the world's requirements of sheet mica.

Petroleum—See Index.

Salt—With a coast-line of about 5,690 km., inland sources in Rajasthan and Little Rann of Kutch and the rock salt mines in Mandi, India has possibilities of attaining a high position among the salt-producing countries of the world. India now claims to be self-sufficient in all qualities of salt, with the exception of rock variety. Salt is produced by solar evaporation on almost all the coasts of India, but particularly on the south-west and near Bombay. The principal salt-producing areas are located in Saurashtra, Tamil Nadu, Maharashtra, Rajasthan, Kutch, Kerala, Andhra Pradesh and Orissa. The only one source of rock salt is at Mandi in Himachal Pradesh which produces annually one lakh maunds of crude rock salt. Besides the existing **Salt Research Institute** was established in 1954 at Bhavnagar in Saurashtra. The principal centres of Salt manufacture are as follows : (1) **Marine Salt Works** at (a) Saurashtra and Kutch (Bhavnagar, Jaffrabad, Jamnagar, Lavanpur, Porbandar, Bharai and Kandla) (b) Maharashtra (Dharaana, Bhoyandar, Bhandup, Uran and Mithapur), (c) Tamil Nadu (Nanpada, Pennukuduru, Madras, Cuddalore, Adirampatnam and Tuticorin), (d) Orissa (Puri, Huma, Gokhurkuda and Sumadi), (e) West Bengal (Contai), (f) Kerala—along the coast ; (2) Salt Mines at Mandi (Himachal Pradesh) ; (3) Inland Sources—(a) Rajasthan (Sambhar, Didwana and Pachbhadra, (b) Bombay and Saurashtra (Kharaghoda and Kuda) and (c) Rann of Kutch.

Ilmenite—One of the most striking features of India's mineral industry is the rapid rise in the production of this mineral. India has now become the world's leading producer of this metal. It is the whitest of all substances and will replace lead more and more in the manufacture of white pigment. It occurs along the beach-sands on the eastern and western coasts of India. The total reserves are estimated at 3,500 lakh tons.

Monazite—is available in Kerala and Coromondal coasts existing in the form of beach-sands in association with ilmenite and is perhaps the largest and the richest in thorium in the world. It also contains a small quantity of uranium. The total reserves of monazite are estimated at some 5 million tons.

In order to conserve supplies for atomic energy development, its exports are now prohibited under Sec. 3 of the Atomic Energy Act, 1948. A factory for processing over 1,500 tonnes a year of monazite beach-sands, has been set up by the Government of India at Alwaye (Kerala).

Orches—are well known as mineral earth pigments. Occurrences are fairly widespread in India ; producing areas are Madhya Pradesh, Vindhya Pradesh and Saurashtra regions. The entire production is retained for internal consumption.

Saltpetre—occurs as natural efflorescence in extensive area in Bihar, U.P., and Punjab. Crude saltpetre is used as a manure, while refined salt-petre is consumed in the manufacture of fire-works, blasting-powder, soaps and matches and in glass ceramic and tanning industries.

Zircon—This rare metal has come into prominence very lately for use in atomic energy and in alloy metallurgy. The main sources of the mineral zircon is found associated with ilmenite beach-sands on Malabar and Coromondal coasts.

Zinc—Zawar mines in Rajasthan are the only important source of zinc ore in India, which are being worked to meet much of her needs in the near future. In November 1965, further zinc reserve was found in Mamandur area in South Arcot district of Tamil Nadu. India's resources are, however, poor.

Beryl—is found in small quantities in certain rocks which contain—generally, mica mines. India is a large producer of beryl, chiefly found in Rajasthan, Tamil Nadu, Kashmir and Bihar.

Chromite—It is found mainly in Bihar, Tamil Nadu, Maharashtra, Karnataka and Orissa.

Dolomite—This is available in large quantities from Birmitrapur and Panposh areas in Sundergarh district of Orissa, where 90 p.c. of the mineral is produced. The other main producing States are

Bihar and Madhya Pradesh. Deposits of dolomite of useful quality, used in the steel meeting industry, have been discovered near Bari village in Mirzapur district of U.P.

Magnesite—is valuable to cement, glass, paper, rubber, cosmetics, refractories and aircraft industries. India's magnesite deposits are in Bihar (Singhbhum), Kashmir, Tamil Nadu (Salem), Karnataka, Rajasthan and U.P. (Almora). By far the largest and the best magnesite deposits in India are found in the Salem district of Tamil Nadu.

Bauxite—The ore from which aluminium is extracted is called bauxite. The reserves and potential resources in India constitute 1/60 of the total world resources. Although India has limited natural resources of non-ferrous metal ores, extensive deposits of bauxite are found in widely separated areas, such as Bihar, Gujarat, Jammu and Kashmir, Madhya Pradesh, Tamil Nadu, Karnataka and Orissa. In spite of the large number of deposits of bauxite in various parts of the country, the producing fields are restricted to Ranchi (Lahardaga) in Bihar, Jabalpur (Katni) in Gujarat, Salem in Tamil Nadu, Belgaum in Karnataka.

Cement—The ingredients of cement are all available in abundance in India. The principal cement-producing centres are Porbandar in Gujarat, Lakheri in Rajasthan, Jabalpur and Katni in M.P., Guntur in Andhra Pradesh, etc.

Kyanite—Perhaps the largest deposits of kyanite in the world are found in India, which is the most important of the minerals used in ceramic industries. Good workable deposits of kyanite occur in Seraikela and Kharswan in Singhbhum district of Bihar and smaller deposits in Mayurbhanj district of Orissa, in Nellore district of Andhra Pradesh and in Hasan district of Karnataka. The Lapsa Buru deposit of Kharswan (Bihar) is the largest in the world and is the principal centre of production.

Feldspar—Workable deposits of feldspar are located in Bihar, Maharashtra, M.P., Tamil Nadu, Karnataka, Rajasthan and W. Bengal. The entire output is utilised mainly in the ceramic industry.

Copper—There are two important copper belts in India, namely, Singhbhum in Bihar and Khetri and Daribo in Rajasthan. Singhbhum copper belt is the principal source at present. **Indian Copper Corpn. Ltd.** has been working the mines at Mosabani and smelting copper at Moubhandar near Ghatsila in Singhbhum district. Reserves of 3.56 crore tonnes with 1 p.c. content have been found in Khetri area, while probable reserves with 0.8 p.c. copper content and above have been estimated in Singhbhum. Besides, reserves of copper ore probable in Sikkim are being worked. The reserves of copper had been estimated at 562,000 tonnes, the average grade of ore was estimated to contain 2.46 p.c.

Limestone—is used principally in the manufacture of cement and for constructional purposes and also as a flux in the melting of iron and lead ores. It is found in Rhotasgarh in Sahabad district of Bihar, at Katni in M.P., at Bundi, Jodhpur and Shirohi in Rajasthan, in Rewah and Mahiar States of Madhya Pradesh. The known deposits of limestone are estimated at 500 crore tonnes.

Tungsten—Tungsten ores are found in Jodhpur and Bikaner, but the reserves of this ore are small, calculated to be able to supply local needs of ferro-tungsten alloy industry.

Bentonite—is a valuable clay similar in its properties to Fuller's Earth. It is found in limited quantities in Bihar, Kashmir add Rajasthan.

Gypsum—Its importance lies in its use as a raw material in the manufacture of ammonium sulphate. Rajasthan contains largest reserve of 92 crore tonnes of gypsum out of the country's total reserves of 98 crore tonnes. Other States where it is found are Tamil Nadu, Jammu and Kashmir and U.P.

Apatite—is one of the non-ferrous minerals of India. Reserves of apatite-bearing rocks are placed at 7 lakh tonnes in Bihar, 80 lakh tonnes in Tamil Nadu and 1.6 tonnes in Andhra Pradesh.

Sulphur—The country has no sizeable source of native sulphur, but ores of base metals are mostly sulphates and a large amount of sulphur is released as by-product in their treatment in metallurgical works, which could be collected. The present production of sulphur in India is almost negligible, the country depending mostly on imports.

Steatite—is also known as soap-stone, talc and in its powdered form as French chalk. It is one of the most variously used industrial minerals. It is available in Tamil Nadu and Rajasthan.

Vanadium—There are large reserves of vanadium-bearing titaniferrous iron ores in Singhbhum and Mayurbhanj districts.

Sillimanite—is a mineral used in the manufacture of furnace lining in the iron and steel and glass and ceramic industries. It is almost a monopoly of India. Deposits of sillimanite are known to occur in Kerala, Madhya Pradesh and Karnataka. The world's largest concentration of sillimanite occurs in the Khasi Hills.

Corundum—is found in Assam, Madhya Pradesh, Karnataka and Rajasthan, the reserves in Madhya Pradesh alone being of the order of 4 lakh tonnes, including one tonne of high-grade mineral.

Fuller's Earth—is chiefly obtained from Bikaner and Jodhpur in Rajasthan and a little also from M.P. Entire production is used for internal consumption.

Graphite—occurs in small quantities in various parts of India, namely, Ajmer, Hyderabad, Kerala, Madhya Pradesh, Tamil Nadu, Karnataka and Orissa. The mineral is mainly used in foundry, and in pencil and paint industries in India.

Antimony—There are small deposits of antimony in Lahaul in Kangra district of Punjab. The Star Metal Refinery continues to be the only manufacturer of antimony in the country.

Calcite—Calcite deposits are found in Nawanagar, Porbandar, Junagadh and Amreli in Saurashtra. The most important of the deposits are found in Amreli. It is used for the manufacture of calcium carbide, bleaching powder, as a flux in metallurgical operation, for imparting glaze on pottery and for making industrial lime.

Lead—India contributes about 0.2 p.c. of the estimated world output of lead ore. Lead deposits now being exploited in India, are located at Zawar in Udaipur and at the Banjavi mines in Jaipur. The commercial production of lead ingot was taken up first by the Metal Corpn. of India Ltd. in 1942-43. They manufacture lead ingot at its smelter at Tundoo, near Dhanbad in Bihar. Lead deposits are located in Palamau district of Bihar.

Titanium—The most important deposits of titanium minerals worked in India lie in Kerala in five stretches on the south-west coast—Nindaka (north of Quilon), Anjengo-Vakala (south of Quilon), Kovalam (south Trivandrum), Muttampudar (near Colachel) and Cape Comorin Liparum (on the eastern coast of Tirunelveli district).

Asbestos—India has a limited resources of asbestos, mainly in Andhra, Bihar, Karnataka and Rajasthan. Of the two chief varieties found in India, the chrysolite asbestos, which is the flexible variety amenable in spinning and hence more valuable, is found in Cuddapah (A.P.), while other deposits yield the tremolite type, which is less flexible.

Barytes—This mineral is used mainly in paint and petroleum industries in India. Deposits of barytes occur in Tamil Nadu, U.P., Rajasthan and in Anantapur and Cuddapah districts of Andhra Pradesh.

Thorium—India's reserves of thorium, a potential atomic fuel, are on a scale of world importance. The known reserves of this metal in the coastal sand deposits are estimated at nearly half-a-million tonnes of thorium oxide. The source of this atomic metal is the mineral monazite which occurs in the ilmenite sands on

Kerala and Tamil Nadu coasts and in parts of Hazaribagh plateau in Bihar.

Uranium—Several deposits of this mineral have been located in different parts of the country, the major deposits being those at Jaduguda, Narwaphar and Bhatin in the Singhbhum Copper Belt of Bihar. Indications of Uranium located in the Himalayan region in Kulu, Rampur-Masharh and Garhwal are under investigations.

Precious Stones—Actual diamond mines are in Panna (Madhya Pradesh) over an area of 750 sq. miles. Sapphires of a very clear blue colour are obtained in Kashmir at an altitude of 14,000 ft. Garnets of a rich deep purplish red colour are found in Barwar in Kishengarh and the adjoining tracks of Jaipur (Rajasthan), Emeralds are obtained from Udaipur and Ajmer (Rajasthan).

MINERAL PRODUCTION IN INDIA 1971 TO 1974

(Important Minerals)

S. No.	Mineral	Unit	1971	1972	1973	1974*
1.	Coal ..	Million Tonnes	71.82	75.66	77.09	83.27
2.	Petroleum (Crude)	Million Tonnes	7.19	7.37	7.20	7.49
3.	Iron Ore ..	Million Tonnes	34.31	35.39	35.56	35.01
4.	Limestone ..	Million Tonnes	25.08	26.05	25.34	24.50
5.	Manganese Ore ..	'000 tonnes	1,841	1,643	1,489	1,423
6.	Bauxite ..	'000 tonnes	1,517	1,684	1,292	1,045
7.	Dolomite ..	'000 tonnes	1,320	1,348	1.449	1,146
8.	Gypsum ..	'000 tonnes	1,088	1,105	886	1,012
9.	Copper ore ..	'000 tonnes	666	873	1,102	1,397
10.	Chromite ..	'000 tonnes	273	295	291	376
11.	Magnesite ..	'000 tonnes	296	251	193	262
12.	Phosphorite ..	'000 tonnes	232	217	137	440
13.	Steatite ..	'000 tonnes	179	211	210	247
14.	Kyanite ..	'000 tonnes	63	68	58	52
15.	Zinc Concentrates	Tonnes	15.855	17,055	23.913	28,763
16.	Mica (Crude) ..	Tonnes	15,099	14,173	13,830	13,268
17.	Lead Concentrates	Tonnes	4,262	5,055	7,672	10,660
18.	Gold ..	Kilograms	3,656	3,290	3,278	3,166
19.	Apatite ..	Tonnes	11,307	11,613	9,980	9,445
20.	Others (Value) ..	Rs. Million	680	768	775*	745
21.	Total value (Excluding atomic minerals & Common salt.)	Rs. Million	5,057	5,431	5,702*	7,530

*Based on actual data for 11 months (Jan-Nov. '74) and Dec. '74 on prorata basis includes board estimates for 'minor minerals' since the actual figures for 1974 are not yet available.

(i) Data given above (excluding Coal and Petroleum) are based on the returns received under M C.D.R., 1958, by the Indian Bureau of Mines and the information available from the different State Governments in respect of 'minor minerals'.

(ii) The source of Coal data is Coal Controller, Calcutta and that for petroleum is the Ministry of Petroleum and Chemicals.

(iii) The value is reckoned in terms of "pit's mouth value."

(iv) The data for the years 1971, 1972 and 1973 are the latest revised figures finalised for the Indian Minerals Year Book 1973 and includes the up-to-date revisions (wherever necessary).

Iron & Steel

IRON RESERVES IN INDIA—India possesses some of the world's largest reserves of iron ore, mainly haematites and magnetites with iron content ranging between 60 and 70 per cent. The iron ore reserves in India assessed at one-fourth of the total reserves, are estimated at 2.100 crore tonnes. There are four different kinds of iron or in India, i.e. magnetite, laterite, alloy iron stone and haematite. The most important of these, haematite deposits, are worked from the Singhbhum and the Orissa fields known as the Iron Belt of India. Magnetite ores occur in Bihar, Himachal Pradesh, Tamil Nadu, Karnataka and Orissa. Extensive spathie (carbonate) ores are present in West Bengal. The proved and indicated reserves of all types of ores amount to about 710 crore tonnes. Iron ore deposits in Goa are estimated at 500 million tonnes and there are about 70 mines in operations. Rich deposits or iron ore have been discovered in Chanderdinga in the Goalpara district and in Hamid near Boko in Kamrup district in Assam.

India's proven resources of iron ore of high-grade content at 22.000 million tonnes are the second largest in the world. In addition, she has reserves of low-grade ores which are estimated at four times this quantity.

Currently per capita steel consumption in India, taking into account domestic output and imports, is 11 kilograms (approximately 24.3 lbs.). This is one of the lowest in the world. Today there are 6 steel plants—1 in the private sector and 5 in the public sector—altogether producing about 5 million tonnes of finished steel. The share of each sector is nearly equal.

ATTEMPTS OF IRON AND STEEL PRODUCTION—The first attempts at iron and steel manufacture by modern methods were made in 1830 in South Arcot (Tamil Nadu). In 1874, Barakar Iron Works started work in the Jharia coal-fields in Bihar. The works were acquired by the Bengal Iron and Steel Company in 1889. Afterwards came the Tata Iron and Steel Works in 1907 at Sakchi (Bihar). Then came Indian Iron and Steel Company in 1918 at Hirapur (Asansol, Bengal) and Mysore State Iron Works (now Mysore Iron and Steel Ltd.) at Bhadravati in 1923.

DEPARTMENTAL SET-UP—Consequent on the reorganisation of certain Ministries in May 1971, Department of Steel under the Ministry of Steel and Mines deals with the Iron and Steel (Control) Order, 1956. Import and Export of Iron and Steel, the Steel industry both in public and private sector, including re-rolling mills and the ferro-alloy industry and the establishment of new steel plants in the public sector. In addition, the following nine public sector undertakings function under the administrative control of this Ministry:—(i) Heavy Engineering Corporation, Ranchi ; (ii) Mining and Allied Machinery Corporation, Durgapur ; (iii) Triveni Structurals Ltd., Allahabad ; (iv) Tungabhadra Steel Products Limited, Tungabhadra ; (v) Bharat Heavy Plates and Vessels Ltd., Visakhapatnám ; (vi) Hindusthan Steel Ltd., Ranchi ; (vii) Bokaro Steel Ltd., Bokaro ; (viii) Hindustan Steel Works Construction Ltd., Calcutta ; and (ix) Engineering Projects (India) Ltd., New Delhi. The total investment in these undertakings as on March 31, 1971 was Rs. 1922 crores.

Steel Authority of India Ltd. (SAIL)—the holding company for steel and associated industries—registered on 25th January, 1973 will plan, promote and organise the integrated development of the iron and steel and associated input industries in the country.

The Government's shareholdings in the public sector undertakings, Hindustan Steel Ltd., Bharat Coking Coal Ltd., National Mineral Development Corporation and Salem Steel Ltd., will be transferred to SAIL, in the first instance. The Bokaro Steel and and Hindustan Steel Construction Co. will also be brought under the SAIL after some time.

SAIL will also act as a nominee of all public sector institutions having shares in the private sector steel plants and in mining companies and mini-steel plants and co-ordinate their operation and development in public interest.

The public financial institution on whose behalf the SAIL would act as an agent include the Life Insurance Corporation, Unit Trust, IDBI, ICICI, IFC, nationalised banks and general insurance companies which hold shares in the private sector companies.

Government shares in companies like Bolani Ores, Manganese Ores (India) Ltd. and Mysore Iron and Steel Co. Ltd., will also be owned by the holding company. When new companies are set up for the proposed steel plant at Visakhapatnam and Hospet, after investment decisions are taken, they will also come under the SAIL.

The SAIL would have subscribed and issued capital of about Rs. 1300 crores by March/April 1973.

The Ministry has one attached office, that of the **Iron and Steel Controller** with the head office at Calcutta and regional office at Bombay, Madras and Faridabad. He is responsible for the administration of the Iron and Steel (Control) Order, 1956, issue of licences for the import/export of iron and steel and for the bulk purchase of steel. He is also the Chairman of the Joint Plant Committee which has been constituted for the receipt and planned distribution of indents for supplies of steel from domestic production and the planning of rolling programmes on the main producers of steel in respect to controlled and decontrolled items of iron and steel. In this work, he is guided by the *Steel Priority Committee*. A monthly bulletin called "Iron and Steel Control Monthly Bulletin" is published by the Iron and Steel Controller. The Technical Wing of the Iron & Steel Controller's office renders advice to the Iron & Steel Controller with regard to production and distribution of indigenous steel and issue of essentiality certificates for import of raw materials, equipment, components and spares for the operation and maintenance of secondary steel producing units, etc.

The **Metal Scrap Trading Corporation**—was formed to develop the export possibilities of ferrous scrap after catering to the requirements of indigenous furnaces. The Board of Directors of this Corporation includes 6 representatives of Domestic Consumers of Scrap, 6 of Scrap Exporters and 6 of the Minerals and Metals Trading Corporation.

A Steel Exporters Association has been registered to encourage and assist exports of steel. The Association includes 2 representatives of the Government, 1 representative of the Joint Plant Committee, 1 representative of the Steel Re-rolling Mills Association.

3 representatives of the Main Producers, 3 representatives of exporting firms and 2 representatives of billet re-rollers.

A "planning cell" has been constituted in the Ministry of Steel and Mines to chalk out long-term plans for the development of steel and mining industries. It works in co-operation with the Planning Commission, the Hindustan Steel, the Coal Development Corporation the Mineral Development Corporation, the National Mineral Laboratory, the CSIR, the Fuel Research Laboratory and other specialised organisations. The cell concerns itself more with long-term planning rather than with the five-year plans or the annual plans. The cell assesses the range of price of coal in the coming decade or two so that the development in this industry is not inhibited either for want of necessary equipment or for want of capital. Among its other activities are to improve the technological know-how so that Indian steel production can keep pace with the latest improvements in other countries.

An **Iron and Steel Advisory Council** was constituted in November 1959, to advise the Government on all matters of general character relating to iron and steel and in particular, to problems pertaining to production, distribution, transport, research, import and export.

Steel Bank—To increase State participation in foreign trade, the Government has decided to set up a "Steel Bank" which will make available from its ready stocks, the requirements of units both in the public and private sectors.

KIRIBURU IRON ORE PROJECT—Situated on the Bonai range of hills lying on the border of Orissa and Bihar, roughly south-east of Rourkela, the Kiriburu Iron Ore Project was conceived to develop vast reserves of iron ore deposits for earning foreign exchange. This project came into being after an agreement between the Government of India and the Japan Steel Mission in 1958 for the sale by Indian to Japanese steel mills of 2 million tonnes of iron ore per year commencing from 1964. This multipurpose project was completed at a cost of Rs. 11.22 crores, assisted financially by a loan from the U S. President's Fund for Asian Economic Development Fund. The National Mineral Development Corporation of the Government of India is responsible for the development of Kiriburu mines. It has been started from November 12, 1964.

UNIT IN THE PRIVATE SECTOR

Tata Iron and Steel Co., Ltd.—Tata plant is the oldest in India. It is situated at Jamshedpur, 156 miles from Calcutta. The plant produced its first iron in 1911 and its first steel in 1913. It present installed capacity is 2 million tonnes of ingot steel per annum. Tatas have also undertaken some ancillary works, such as, a new ferro-manganese plant at Joda, a new refractory plant at Joda, a new refractory plant at Belpahar in collaboration with Didier International, a ferro-sulphate washing plant and a plant for the recovery of scrap iron from slag by Hickett process.

UNITS IN THE PUBLIC SECTOR

Public Sector Steel Plants—Four integrated iron and steel plants in the public sector, with estimated capacity of 10 lakh tonnes each, have been set up at Rourkela, Bhilai, Durgapur and Bokaro. The management of the first three plants along with the Coal Washeries at Dugda, Bhojudih and Patherdih, the setting up of the Alloy Steel Plants at Durgapur, as well as the expansion of three Steel Plants at Rourkela, Bhilai and Durgapur to 1.7, 2.5 and 1.6 million tonnes capacity respectively vests in the State-owned Hindustan Steel Ltd. (See Index).

A construction company was set up in the public sector in June 1964, under the name **Hindustan Steel Works Construction Ltd.**, with an authorised capital of Rs. 1 crore. The objective was to develop and centralise the construction of steel plants. To start with, the HSWC is undertaking the construction of Bokaro steel plant.

The present capacity in the public sector is 2.5 mllion tonnes at Bhilai, 1.7 million tonnes at Rourkela and 1.6 million tonnes at Durgapur. The total outlay on all the existing steel plants in the public sector is Rs. 1.053 crores.

Rourkela—is the first of the three Government steel projects to take shape. It is about 257 miles west of Calcutta on the main Calcutta-Bombay rail-route in Orissa. Though originally conceived in 1953, the agreement for a million tonne plant at Rourkela was finished with a combine of two German firms, Messrs. Krupp and Demag in July 1955. The project report was submitted in November 1956. The capital cost of the plant up to one million tonne stage would be Rs. 233 crores. It is supplied with ore mainly by Barsua and Katta Iron Mines and partly by Banaspati, Barbil and Barajanda Mines and coal from Kargali and Jharia. Washeries have been established at Kargali for washing coal. The unique feature about this plant is that 75 p.c. of the steel is made by the new L.D. process. This process consists in blowing oxygen at high pressure into molten iron in special vessels called 'Convertors'. This L.D. process results in the release of large quantities of nitrogen as by-products. The President of India inaugurated the first Blast Furnace on February 3, 1959 making the start of iron production. The first Coke Oven Battery was commissioned in December 1958 and the second in March 1960. The first steel ingot in the Public Sector was produced on April 30, 1959, when the first Open Hearth Furnace was commissioned. The second and third Blast Furnaces were commissioned in 1959 and February 1960 respectively. The first L.D. Convertors was commissioned in January 1960. The Blooming and Stabbing Mill went into production in January 1960 and Plate Mill in September 1960. The Strip Mill was commissioned in March 1961. A Pipe Plant was set up as an adjunct to the Steel Plant. The capital cost of the plant was Rs. 3 8 crores. The Fertilizer Plant, put up as an adjunct to the Steel Plant at a capital cost of Rs. 25 crores, was also commissioned in 1962. The capacity is 5.9 lakh tonnes of nitro-limestone per year.

Bhilai—An agreement was signed on 2nd February, 1955 between the Government of India and the Russian Government for starting a second steel factory at Bhilai. The main units of the Bhilai works consist of—(1) Iron-making, (2) Steel-making and (3) Rolling mills.

Under a contract signed between the Hindustan Steel Ltd. and the Russian organisation in 1962, the capacity of Bhilai Plant is being expanded to 25 lakh tonnes of steel ingot per annum, which will be rolled into 19 lakh tonnes of finished and semi-finished steel. The capacity envisaged was 1 million tonnes of ingots for 7.7 lakh tonnes of pig iron for sale. The production of pig iron at Bhilai was inaugurated on February 4, 1959, when the first Blast Furnace was commissioned. The production of coke had started a few days earlier. The production of steel at Bhilai was inaugurated on October 12, 1959 when the Open Hearth Furnace No. 1 was commissioned. The Blooming Mill was commissioned on November 7, 1959, the Billet Mill on December 24, 1959 and the Rail and Structural Mill on October 27. 1960. Open Hearth Furnace No. 6 was commissioned on February 22, 1961 marking the completion of the Plant. The sixth blast furnace was commissioned on 31st July, 1971. This blast furnace forms a part of the total efforts of the Bhilai Steel Plant to raise its production from the present rated capacity of 2.5 million tonnes to 4 million tonnes. It is the largest blast furnace in India and is expected to produce 6 lakh tonnes of pig iron per year. The seventh coke oven battery (65 ovens) has been commissioned marking the completion of the sixth blast furnace complex. Built at a cost of Rs. 8.50 crores, the coke oven battery will yield 458.680 tonnes of coke annually.

Durgapur—is the third Steel Plant in the public sector. The Indian Steel Works Construction Company Ltd. (ISCON) signed a contract with the Government of India on 31st October, 1966, to build an integrated steel works at Durgapur in West Bengal, 110 miles from Calcutta. ISCON was formed as a consortium of 13 British engineering and electrical firms. The Durgapur Plant was completed in Aug. 1962.

The first Blast Furnace at Durgapur went into production in December 1959. The production of steel was started in April 1960 with the commissioning of the first Hearth Furnace. The Blooming and the Billets Mill were commissioned in May and June 1960 respectively, followed by Wheel Tyres and Axles Plant. The capacity of the Steel Works is being expanded to 1.6 million tonnes of steel.

Mysore Iron and Steel Ltd.—was registered in 1961 and took over the management of the Mysore State Iron Works on 1st April, 1962. Its paid-up equity capital at present is Rs. 21.72 crores.

The Union Government has sanctioned the scheme for establishing a third electric pig iron furnace at the Mysore Iron and Steel Works. This scheme will cost about Rs. 2.5 crores. When the furnace is installed, pig iron production is expected to increase from 80,000 tonnes to 2 lakh tonnes annually. This expansion was necessitated by the increase in mild steel production.

The first set of installations at the Mysore Iron and Steel Works, Bhadravati, went into production on March 6, 1975. The Bhadravati Steel Works is being converted into a high-grade and alloy steel plant. The first set includes one of the two 20-tonne electro-furnaces, a 680-mm blooming mill and a 603-mm heavy plate mill. West Germany has given a loan of about Rs. 7.2 crores for the conversion project. The proposed plant will have an initial capacity of 1.5 million tonnes of steel which will be later developed to 4 million tonnes. The alloy and steel plant at Bhadravati will have two more electric furnaces, with an annual capacity of 1.25 lakh tonnes, for producing pig iron. A contract has been signed with Messrs. Demag, a West German firm.

Bokaro—An agreement between India and U.S.S.R. for cooperation in the construction of an integrated iron and steel plant at Bokaro was signed on Jan. 25. 1965. Memorandum of acceptance of the Soviet detailed Project Report on Bokaro Steel Plant was signed by Bokaro Steel Ltd. on March 29, 1966, after obtaining Government's approval.

The foundation of the first blast furnace of the Bokaro Steel Plant was laid on April 6, 1968. The Bokaro Steel Plant will be sixth major steel plant in India and the fourth in the public sector. The steel plant will have an initial capacity of 1.7 million ingot tonnes of steel, which will be rolled into about 1.364 million tonnes of finished steel products such as plates, sheets and coils. Besides these flat steel products, Bokaro will produce, in the first stage, 2,80,800 tonnes of pig iron. Necessary built-in capacity is being provided in the different units for expansion of the plant's capacity to 4 million tonnes of steel ingots in the second stage and further expansion to 5.5 million tonnes later. The authorised capital of the company which was Rs. 385 crores has now been raised to Rs. 500 crores. The amounts actually subscribed by Government up to 31st March, 1971 is Rs. 410 crores. The Government have also given loans totalling to Rs. 89.46 crores during 1970-71. The total outlay on Bokaro Steel Plant will be Rs. 680 crores, which includes Rs. 50.32 crores for off-site facilities in the first stage and about Rs. 1,100 crore when it reaches its ultimate capacity. The Soviet Government has extended a credit of 200 million roubles (Rs. 167 crores) for meeting the foreign exchange cost of the first stage. In the first stage, Bokaro's main units will be four coke oven batteries with 69 ovens in each battery, a sinter plant with an annual capacity of over 4 million tonnes, three blast furnaces each capable of producing over 2,500 tonnes of foundry iron per day, a steel-melting shop with four oxygen-blown convertors each with a capacity of 100 tonnes, hot and cold rolling mills, and a by-products plant. The first blast furnace of the Bokaro plant was commissioned on October 3, 1972. (See Index).

The Indian Iron and Steel Co. Ltd., has its two plants at Burnpur and Kulti, approximately 140 miles from Calcutta. Great expansion was undertaken to step up production of saleable steel up to 800,000 tonnes. Its present installed capacity is 1 million tonnes of ingot steel. The President of India on 14th July, 1972 promulgated an ordinance providing for the taking over of the management of the IISCO for a period of two years with a view to securing increased production.

NEW STEEL, PLANTS—Government's decision on the setting up of special steel plant at Salem in Tamil Nadu, and two integrated steel plants, one each at Hospet in Mysore and Visakhapatnam in Andhra Pradesh was announced by the Prime Minister in Lok Sabha on April 17, 1970. Following this decision a number of

Committees were constituted, for the selection of the project sites and for the identification of sources of raw materials for each of these projects. The Site Selection Committee, comprising representatives of the concerned Central Ministries and Departments of the State Government, and the two Consultants to Government, visited all the three regions in June and July, 1970.

In the case of Salem Project, the Committee came to the conclusion that the seven possible sites in the Salem-Neyveli region, a site about 14 kms. west of Salem town, the northern flank of Kanjamalai iron ore deposit, on which this project is based, was most favourable because of lower assembly cost of raw materials, minimum displacement of population and other infrastructure facilities available in the vicinity. Government approval of the Committee's recommendation in regard to this site was announced on November 25, 1970.

In the case of Hospet Project, the Site Selection Committee examined four sites and favoured the Toranagalu site as it could easily be served by the marshalling yard proposed at Kudatini, at a distance of about 15 km. whereas the other sites were beset with many technical problems. Government approval of the Committee's recommendation for location of the project at Toranagalu was also announced on November 25, 1970.

For the Visakhapatnam plant, the Committee considered three sites and recommended Balacheruvu, as sufficient land was available for the project township and ancillary industries. Government approved this recommendation of the Committee on November 30, 1970.

Bolani Ores Limited—To supply iron ore to Durgapur Steel Plants a mine has been developed at Bolani in the Guar region of Orissa, where ore deposits are extensive and rich. For the development and operation of the mine, a company called Bolani Ores Limited was set up in June 1957 jointly by the Government of India, with 50.5 p.c. and the Orissa Mineral Development Company 49.5 per cent of the shares respectively. The last phase of mining has already been completed and the company is currently producing 2 million tonnes of iron ore per year. The supply of ore to the Durgapur Steel Plant started in April 1960.

ALLOY STEELS—Alloy steel in very broad sense connotes steel to which one or more alloying elements have been deliberately added with the object of imparting superior, mechanical and physical properties.

India's first alloy and special steel plant in the public sector was commissioned in Durgapur on January 23, 1965. The project's construction work was done in collaboration with Japan, which also supplied the main plant and equipment.

The present installed capacity of the units in the private sector A low-alloy steel plant, with an initial capacity of 1½ lakh to is about 100,000 tonnes. 2 lakh tonnes will be established in Salem (Tamil Nadu).

The Government have approved the setting up of 2 stainless steel units—one at Madras and another at Vatwa in Gujarat.

Wire Drawing—There are 15 comparatively large units. Medium size with drawing units account for a total capacity of about 86,740 tonnes. Small-scale units, more than 90 in number, have an aggregate capacity of about 150,000 tonnes.

Pig Iron—The Government sanctioned 3 schemes for setting up pig iron plants with a total capacity of 1 lakh tonnes per year, each in Rajasthan, Maharashtra and Andhra Pradesh. A pig iron plant will be established in Hospet in Karnataka. In the private/State sector, at present the existing capacity is of the order of 716,000 tonnes per annum.

Tin Plate—The present installed capacity in the private sector is about 150,000 tonnes per annum. In the public sector, the capacity of Rourkela Steel Plant is 200,000 tonnes.

Sponge Iron—Government have decided to set up a pilot plant at the National Metallurgical Laboratory, Jamshedpur with a capacity to manufacture 20 to 25 tonnes of sponge iron per day. The capital cost of the project is estimated to be Rs. 50 lakhs. The present licensed capacity to manufacture sponge iron is 1,00,000 tonnes per annum.

STEEL CASTINGS—There are at present 25 units, with an installed capacity of 58,840 tonnes, producing steel castings.

Coal

COALFIELDS IN INDIA—Coal is a fuel and an industrial raw material. When carbonised, it produces coke which is essential for the iron and steel industries. It also produces a large number of by-products. such as tar and benzol. Coal mining in India was first started in Raniganj, Bengal in 1814.

The principal users of coal in India are the Railways, the thermal power stations and a large number of industries includin iron and steel, cement, refractories and glass, textiles, paper and board, sugar and chemicals. It is also required for bunkering and export, brick kilns, for domestic use and by the collieries themselves.

In India, coal occurs mainly in formation of Gondwana and Tertiary ages. The reserves of coal occurring in seams of 0.3 metre or more thickness down to the depth of 609 metres are estimated at 1,21,360 million tonnes. Rich deposits (about 11 crore tonnes) of coal with high coking index have been discovered at Chano Rikba of North Karanpura coalfield. New seams have also been discovered in Singerauli, Ramgarh and Raniganj coalfields. Another colliery at Bisrampur in M.P. started production in March 1965.

The total reserves of all grades of coal in India are estimated at 3,00,557.50 lakh tonnes. Recently the reserves of coking and semi-coking coal have been estimated at 80,000 lakh and 1,04,380 lakh tonnes, respectively.

COAL RESERVES IN INDIA IN MILLION TONNES

State	Proved	Indicated	Inferred	Total
West Bengal	4,038.36	5,994.89	9,585,65	19,618.90
Bihar	10,590.28	16,118.23	8,521.60	35,230.00
Madhya Pradesh	4,264.55	4,067.49	7,168.40	15,482.44
Orissa	895.40	2,417,96	1,810.12	5,116.48
Maharashtra	477.86	799.73	1,344.06	2,617.65
Andhra Pradesh	977.95	1,077.18	—	2,055.13
Assam, Meghalaya, Arunachal & Nagaland	139.00	290.60	398.00	827.60
GRAND TOTAL	21,365.40	30,759.08	28,827.91	80,952.39

The bulk of the better quality of coal reserves in India is situated in what is called the Bengal-Bihar coal belt, although production of coal is being expanded in Andhra Pradesh, Assam, Madhya Pradesh and Orissa. Lignite or brown coal, is mined in Neyveli (Tamil Nadu).

Nationalisation of coal industry—The entire coal industry was brought under direct Government control with the promulgation on January 30, 1973 of an ordinance which provided for the take-over of the management of over 464 non-coking coal mines. In May 1973, 314 coking coal mines were nationalised.

Goal India Ltd.—was formed on Sept. 19, 1975. Its headquarters is in Calcutta. It has a capital of Rs. 750 crores. The company will have, in addition to the Central Mines Planning and Design Institute at Ranchi, the following four regional companies as subsidiaries: the Bharat Coking Coal Limited, comprising the BCCL together with the Sudamih and Monidih mines of the NCDC (headquarters at Dhanbad); the Eastern Coalfields Limited, comprising the present eastern division of the CMAL (headquarters at Sanctoria); the Central Coalfields Ltd., comprising the NCDC and the central divisions of the CMAL (headquarters at Ranchi): and the Western Coalfields Ltd., comprising the western division of the CMAL (headquarters at Nagpur).

The holding company will have a board of directors headed by a full-time chairman. The board of directors will include the managing-directors of the subsidiary companies and the other part-time directors nominated by the Government.

The functions of the holding company would be to set targets and monitor them, to approve budgets, determine standard costs and retention prices and evaluate performance, to co-ordinate amongst subsidiary companies, to prescribe priorities, and to lay down guidelines for industrial relations and wage policies. It will also be responsible for the overall policy regarding coal distribution.

LIGNITE—The integrated Neyveli Lignite Project envisages the mining of 3.56 million tonnes of lignite per annum, out of which 1.52 million tonnes are to be utilised by 250 mw of thermal power in a thermal power station with 5 units of 50 mw each, 0.52 million tonnes on the production of 1,54,000 tonnes of nitrogenous fertilizers in the form of urea, and 1.52 million tonnes on the production of 3,86,000 tonnes of carbonised lignite briquettes for use as domestic and industrial fuel. Full production at the targeted rate of 3.5 million tonnes per annum is expected to be achieved shortly, when all the lignite consuming units of the Integrated Project, namely, the thermal power station, the fertilizer plant and the briquetting and carbonisation plant, would be in operation. Under the scheme, for the control of underground water, 58 pumps are now working (See Neyveli Lignite Corporation).

Out of the five 50-mw units of the power station, four are already in operation. The Government sanctioned in October 1959, the setting up of a Fertilizer Plant at Neyveli for the production of 1,52,000 tonnes of urea with nitrogen content of 70,000 tonnes per year. The present estimated cost of the Integrated Project is Rs. 94 crores.

COAL WASHERIES—with a limited reserves of metallurgical coal in the country, steps have been taken (1) to wash all metallurgical coals so as to lower the ash contents and (2) blend weak and semi-coking coals with fully coking coals of Jharia. Hence, Hindusthan Steel Ltd. installed 5 Coal Washeries at Durgapur, Dugda I, Dugda II, Bhojudih and Patherdih. The total investment in the Coal Washeries being set up by Hindusthan Steel was estimated at Rs. 28 crores. These are in addition to the Coal Washeries at Jamadoba, West Bokaro and Lodna in the private sector and the one put up by the National Coal Development Corporation at Kargali in the public sector.

The Durgapur Washery was commissioned in April 1960 and supplies washed coal to Durgapur Steel Plant only. Dugda Washery, located in the Hazaribagh district of Bihar, has been in operation since December 1961. It is designed for an annual input capacity of 2.4 million tonnes of raw coal. Bhojudih Washery, situated in the Purulia district of West Bengal, commenced operation in Aug. 1962. Patherdih Washery, located in the Dhanbad district of Bihar, has been designed with an annual capacity of 2.0 million tonnes of raw coal and was completed in Sept. 1964.

The first composite type of coal-washing plant in the public sector was installed at Kargali in Hazaribag district of Bihar in 1958, costing about Rs. 2.46 crores with an annual capacity of 16 lakh tonnes of washed coal.

The following washeries are also being formed—(1) Kathara (3 m. tonnes) in collaboration with a Russian firm under 112.5-million rouble credit; (2) Gidi (Karanpura, 2.84 m. tonnes) in collaboration with a Polish firm under Rs. 14.3-crore credit; (3) Swang (0.75 m. tonnes) in collaboration with the C. F. R. I. and (4) Chalkari (Kargali Extension, 0.5 m. tonnes).

COAL BOARD—was set up under the Coal Mines (Conservation and Safety) Act, 1952 for the purposes of promotion of safety in coal mines and conservation of coal resources. The main activities of the Board are: (1) Financial assistance to collieries; (2) Collieries seams continue to be graded in accordance with the prescribed specification; (3) Establishing a Central Coal Mining Research Station at Dhanbad. The expenditure of the Board is met out of a fund known as the Coal Mines (Safety and Conservation) Fund created from the receipt of excise duty levied on all despatches of coal and hard coke.

COAL COUNCIL OF INDIA—helps to co-ordinate the programmes of transport, coal and power, implied training of technical personnel and prospecting and drilling of areas from which coal will be raised.

TRAINING—5 Mining Training schools are at present functioning. These schools are located at Talcher, Kargali, Kurasia, Giridih and Bhurkunda collieries. The NCDC also runs 9 evening lecture centres for sardars and shot fires and 3 evening lecture centres for assistant surveyors.

Mineral Oil

EARLY HISTORY—In India, a natural gas supage has for centuries been worshipped as a thing of awe at Jawalamukhi in the Kangra Valley of Punjab. An army naturalist, exploring for coal in Assam as early as 1828, came upon streaks of oil—but he ignored them. Some years afterwards, when the railways were being laid in Assam, a lumber elephant returned from the woods with a foot soaked in oil.

In 1867, after oil was discovered in America, the first oil-well was sunk in India. The first successful well was sunk at Digboi in 1889, where oil was struck at 662 ft. In the next 60 years, whatever oil was produced in India was at Digboi. Over the period, Digboi production went up to 500,000 tonnes.

The Digboi crude oil was refined at a refinery set up there in 1900. The oilfield and the refinery belonged to the Assam Oil Company which was later bought over by Burmah Oil Company, a part of the world-wide Burmah-Shell Oil enterprise.

Between 1889 and 1947 oil exploration was conducted in various parts of the country including Baroda.

EXPLORATIONS—Of the 1262 lakh sq. miles that make up the total area of India, nearly a third, i.e. some 400,000 sq. miles are sedimentary areas where oil is likely to be found.

After independence, the Govt. of India has been able to make much headway in the exploration of oil resources. Following is the list of achievements : (1) More than 62 million tonnes of deposits have been proved in Gujarat; (2) Production of crude oil, which was only 3 lakh tonnes in 1948, is today 5.9 million tonnes ; (3) In 1947, there was only one oil refinery, handling 3 lakh tonnes. Today, 9 refineries are working, 4 in the Private sector and 5 in the Public. (4) Organisations have been set up in the public sector to deal with all phases of the oil industry.

A Petroleum Division was set up in the Geological Survey in 1955 in order to conduct the search for oil in a systematic manner. This grew into a Directorate of Oil and Natural Gas in the Ministry of Natural Gas Commission (ONGC) in August 1956 and three years later, it was converted into a statutory organisation. Its main functions, as defined in the Act of Parliament, are to "plan, promote, organise and implement of petroleum resources and the production and sale of crude produced".

One of the first tasks of the Oil Organisation was to build up corps of scientists and technicians. The organisation acquired a deep-drilling rig from Rumania and entered into agreements with Soviet Union for the supply of more equipment. Under the Colombo Plan, Canada undertook an aeromagnetic survey of the Indo-Gangetic plain. ONGC has also signed agreements with the Italian State-owned oil company, ENI, and the French Petroleum Institute for assistance in explorations.

ONGC has 2 training institutes at Cambay in Gujarat and Sibsagar in Assam, each admitting 100 people to be trained as rigmen machinists and mechanics. Besides, it set up the Institute of Petroleum Exploration at Dehra Dun to deal with research in oil exploration and the Indian Institute of Petroleum which deals with research in refining and marketing.

However, ONGC is not the only agency carrying on oil explorations in India. The Burmah Oil Company found large reserves in Naharkatiya, Moran and Hugrujan in Upper Assam in 1852. To develop these resources, the Burmah Oil Company and the Government of India went into partnership to form Oil India Ltd. in 1958.

Earlier in 1954 an agreement was made with the Stanvac to explore the West Bengal basin. Stanvac called off the search after 6 years after drilling 10 dry wells.

In 17 years, ONGC has discovered 5 oil fields in Assam and 21 in Gujarat. In 1974, it has discovered oil deposits into the Arabian Sea at Cambay (Bombay High) near Bombay.

PRODUCTION—The work of ONGC is not only to explore but also to produce oil resources. Normally, it takes three to four years between the time when oil is found and the time when it can be despatched.

ONGC has built a pipeline from Ankleshwar to Koyali (near Baroda) where a State refinery has been set up. Pipelines have also been laid down from Ankleshwar to Uttaran and from Cambay to Dhuvaran for carrying natural gas.

Meanwhile, Oil India Ltd. has also made substantial progress. Apart from providing half the total production of the country, Oil India laid a long pipeline connecting the oilfield of Assam with the refineries at Nunmati and Barauni. 720 miles in length, the pipeline is the second longest in Asia and one of the most modern in the world. Its final cost was about Rs. 45 crores.

OIL INDIA LTD.—with its headquarters in Duliajan (Assam), has an authorised capital of Rs. 50 crores. It was incorporated on February 18, 1919, with the Government of India holding 33⅓ per cent of paid-up shares in the Company which is now 50%. The Company held mining leases over an area of about 1321 sq. km. and petroleum exploration licences over an area about 1219 sq. km. in North Eastern India. The main objectives are: (1) exploration for and production of crude oil (including natural gas) and (2) construction of a pipeline to transport crude oil to the Government-owned refineries at Nunmati and Barauni, with initial capacities of 0.75 million tonnes and 2.0 million tonnes per annum respectively. Consequent on the signing of such supplementary agreement on July 27, 1961, the Government of India and B. O. C. became equal shareholders in Oil India.

REFINING—The oil drilled out, called 'crude', is refined or distilled to separate the numerous compounds of which it consists such as fuel gas (can be used as fuel for lighting, heat and power), propane butane, light naphtha (used by automobiles), heavy naphtha, kerosene, stove oil, light gas oil (furnace oil, as also diesel), heavy gas oil, vacuum oil, pitch (from which comes the asphalt).

The present refinery capacity in the country is about 19.56 million tonnes. Of these the capacities in the private sector refineries are 8 million tonnes.

In pre-independence days, India had only a small (0.3 million tonnes) refinery at Digboi. In 1951, two agreements were concluded with Standard Vacuum Oil Company and Burmah-Shell to set up refineries in Bombay. Later, a, similar agreement was concluded with Caltex to instal a somewhat smaller refinery at Visakhapatnam.

In February 1959, a State Company, the India Refineries Ltd. (which later merged with Indian Oil Corporation Ltd.) was formed to build and manage the refining business in the public sector. Agreements were concluded with Rumania in October 1958 to set up a refinery at Nunmati near Gauhati, Assam and with the Soviet Union in September 1959 to build a refinery at Barauni in North Bihar.

The Indian Oil Corporation Ltd. (Refineries Division) and the Soviet export organisation executed a contract on January 11, 1965 providing for the delivery of 1.540 tonnes of equipment and materials for the expansion of the Barauni Refinery. The total cost of the expansion is estimated at Rs. 276 lakhs of which the cost of supplies and technical assistance from the USSR will be Rs. 73.29 lakhs.

The ONGC signed agreement with Tiajpromexport, the Soviet export organisation, in January 1965, providing for expansion of the capacity of the Koyali Refinery in Gujarat to 3 million tonnes of crude oil. The total cost of expansion will be Rs. 2.91 crores. The Soviet Union has given a credit of Rs. 59.53 crores for setting up the refinery and other industrial project. From April 1, 1965, the control and management of the Koyali Refinery Project have been taken over by Indian Oil Corporation Ltd. (Refineries Division) from ONGC. It was inaugurated on October 18, 1966.

An agreement was reached with Phillips Petroleum Company of the U.S.A. to set up a refinery at Cochin with a capacity of 2.5 million tonnes. The refinery will produce all normal fuels, such as gasoline, kerosine, diesel and furnace oil and asphalt for road-making. Built in 30 months at a cost of Rs. 30 crores, it was inaugurated on September 23, 1966. A two-way pipeline, 30 inches in diameter, connects the refinery with Ernakulam port.

A 2.5 million tonne oil refinery has been set up in the public sector in Madras under an agreement signed on November 18, 1965 by the Pan American International Oil Company.

Agreements for the establishment of a 2.5 million tonne oil refinery and Lube Plant at Haldia were concluded between the Government of India and the French and Rumanian collaborators on September 9, 1967 and October 16, 1967 respectively.

OTHER REFINERIES IN THE PUBLIC SECTOR

BARAUNI—In Bihar. Set up with the Soviet Union's collaboration. Started production in July 1964. Capacity: 1st stage—1 million tonnes; 2nd stage—2 million tonnes; 3rd stage—3 million tonnes. Present throughput: 1.62 million tonnes.

COCHIN—Set up with the co-operation of Phillips Petroleum Co., U.S.A., with a capacity of 2.5 million tonnes with a provision for expansion up to 3.5 million tonnes. Inaugurated on 23rd September, 1966; went on stream in June 1969. Throughput: 2.5 million tonnes.

KOYALI—Near Baroda in Gujarat. Set up with the Soviet Union's assistance. Its first unit, having an annual capacity to produce one million tonnes of petroleum products, was commissioned on October 1, 1965.

The refinery will draw crude oil from the oilfields of Ankleshwar, Kalol, Nawagam and other North Gujarat oil fields. Capacity—1st stage—1 million tonnes; 2nd stage—2 million tonnes; 3rd stage —3 million tonnes.

NUNMATI—Near Gauhati in Assam. Set up with Rumanian collaboration. Started production in January 1962. Capacity: 1st stage—0.75 million tonnes; 2nd stage—1 million tonnes.

MADRAS REFINERY—The refinery set up at Madras with the assistance of Government of India, National Iranian Oil Co. and Pan American International Oil Co. Started production in the end of June 1969. The capacity of the refinery is 2.5 million tonnes per annum and it will also produce lube base stock and sulphur in addition to other petroleum products like motor gasoline, naphtha, kerosene, HSD etc.

ESSO—At Trombay near Bombay. Started production in July 1954, with a capacity of 1.2 million tonnes. Present throughput: 2.55 million tonnes. This refinery has been taken over by the Government in 1974.

LUBE REFINERY—In order to conserve foreign exchange on imports of lube base stock—raw material for production of final lubricants—Government sanctioned three new plants, at Bombay. Madras and Calcutta. Lube India Ltd. was a joint venture refinery at Bombay with the Government of India and Esso as equal partners. The construction of the plant was completed in December 1969 and the refinery went on stream in January 1970. The project was formally inaugurated on 12th February, 1970. The design capacity of this refinery is 170,000 tonnes per year. The lubrication oil blending plant of the India Oil had been formally inaugurated in March 1970 at Tondiarpet near Madras. The Rs. one-crore plant which has already started production had been designed, constructed and commissioned entirely by Indian experts. It will produce 1.40 lakh tonnes of various lubricants every year.

DISTRIBUTION—Until 1959, marketing of oil in India was wholly in private hands. The State entered this important business in June that year by setting up Indian Oil Company which later merged with the Indian Refineries Ltd. a refining firm, also in the public sector to form Indian Oil Corporation Ltd. The Corporation, with headquarters in Delhi has 2 Divisions—refining and pipelines and marketing. The refining and pipelines headquarters is in New Delhi and marketing is in Bombay.

The Indian Oil International Ltd., a wholly-owned subsidiary of the Indian Oil Corporation Ltd. which was registered at Kathmandu on June 11, 1970 as a foreign company for the sale of Indian oil products within Nepal, started its trading activities on November 1, 1970.

The export of petroleum products during 1972 was 109,000 tonnes valued at Rs. 8.94 crores. The import of petroleum products during the same period was 15,574,000 tonnes valued at Rs. 200.78 crores.

PETRO-CHEMICAL INDUSTRIES—With the production of natural gas in Gujarat and Assam and of refinery gases in the various refineries, a Petro-Chemical industry is also taking root in the country. In the public sector, the Fertilizer Corporation of India, a Government of India, undertaking, has launched a programme of setting up a chain of chemical fertilizer factories all over the country.

The Indian Petrochemicals Corporation Ltd. is conducting the Gujarat Petrochemicals Complex, which is the first petrochemical complex being set up in the public sector.

PIPELINE PROJECT—Pipelines have become the sine qua non of the oil industry. India's first trunk pipeline for transport of crude oil from Naharkatiya to the State-owned refineries at Gauhati and Barauni is complete ; the Naharkatiya-Gauhati sector is already supplying crude oil to the Gauhati refinery and the Gauhati-Barauni sector is also working. The total length of the pipeline is almost 720 miles. This pipeline is the second longest in Asia.

A contract for the construction of 5 pipelines in Gujarat area was signed on May 6, 1963 between Oil and Natural Gas Commission and SNAM, a subsidiary of the ENI, Italy. About 370-kilometre long pipelines will carry natural gas, crude oil and petroleum products.

India's first long-distance product-pipeline linking the Gauhati refinery with Siliguri (West Bengal) has been formally commissioned. The pipeline, 462 km. in length, will carry 4.81 lakh tonnes of oil products every year, relieving the railways of a big burden. Its designing, engineering and construction management were entrusted to the Bechtel Corporation of U.S.A. The construction was done by the SNAM of Italy, under the agreement of 1961.

The two longer pipelines totalling 1,192 km., which connect the Barauni Refinery with Calcutta and Kanpur have been completed.

RESEARCH AND TRAINING IN PETROLEUM—An Indian Institute of Petroleum has been established with the assistance from the French Petroleum Institute under the control of the Council of

Scientific and Industrial Research. An Institute of Petroleum Exploration at Dehra Dun in the ONGC with the assistance of UNSF was established in 1962. Institute of Petroleum Exploration conduct problem oriented research in exploration and production of oil and give advise to ONGC.

Irrigation

India's water resources have been provisionally estimated at 13,560 lakh acre-feet, of which approximately 4,500 lakh acre-feet are believed to be useable for irrigation. The irrigated area in the country is now 70.0 million acres.

During the last 25 years, since the beginning of planning, irrigation facilities have been doubled from 22.6 million ha. to about 46 million ha. Irrigation plans have been taken up on the basis of needs and availability of surface and ground water. As many as 612 major and medium schemes have been taken up for execution, of which nearly 380 have been completed. The draft Fifth Plan envisages the completion of 64 out of 75 major and all the 155 medium on-going irrigation schemes spilling over from the Fourth Plan. In addition, the States have proposed a large number of new schemes for taking up during the Fifth Plan period. The total tentative outlay provided was of the order of Rs. 2401 crores (based on 1973 prices) with targets of additional benefits of 6.2 million ha. According to the latest assessment, it is anticipated that an outlay of of Rs. 3115 crores would be required to achieve the desired results. This, however, does not provide for any future escalation.

Since 1951, major and medium irrigation projects have created an additional irrigation potential of 11.7 million ha. up to the end of the Fourth Plan bringing the total to 21.4 million ha.

ORGANISATIONAL SET-UP—The Ministry or Irrigation and Power, constituted in 1952, is now responsible for irrigation only. The Dept. of Energy has been formed on 11 Oct. 1974 with the Departments of Power and Coal. Besides laying down the policy for the conservation, development and regulation of the country's water and power resources, the Ministry performs the following functions :

Provision of financial and technical assistance to State Governments and Union Territories in the field of irrigation; power, flood control, drainage, anti-water logging and anti-sea erosion measures; regulation and development of inter-State rivers and river valleys, research on river valley projects and flood control works; applied research in power; watching the progress of execution of projects in irrigation and power and costs against estimates; examination of schemes formulated by the States for inclusion in Plans; international questions relating to the conservation, regulation and exploitation of river water resources, and aid received for development of irrigation and power in India and similar aid given to other countries by India; arranging allocation of foreign exchange and materials; implementation of the Indus Waters Treaty, 1960.

An Irrigation Commission was set up in April 1969 to review the development of irrigation in the country since 1903 and to report on the future programmes for integrated development of surface and ground-water resources for maximising agricultural production. The Commission recommended for the setting up of a National Water Resources Council, a National Irrigation Grid and River Basin Commission. It was recommended a single Directorate of Hydrology for the assessment of the surface water resources and river basin commissions for the preparation of plans for all the major river systems.

The proposed National Water Resources Council will decide on policy matters regarding the conservation of resources and their utilization and inter-basin transfers of water. It is also visualized as a body deciding priorities for uses of water in the national interest and for overseeing the work of the river basin commissions.

The Commission has made some recommendations on the speedy settlement of inter-State river water disputes.

It has also examined the various irrigation codes in the country and suggested that these be made uniform in each State but also as far as possible regionally.

Several proposals on streamlining the drawing-up of projects and their sanction and execution have been made together with recommendations on the considerations of economy and finance that should be followed.

Inddus Waters Treaty, 1960—A treaty fixing and delimiting the rights and obligations of India and Pakistan in regard to the use of Indus System of Rivers, was signed between India and Pakistan on September 19, 1960. In accordance with the treaty both the Governments created a permanent post of Commissioner for the Indus Water. As required under Article V of Indus Water Treaty, 1960, tenth and the last annual instalment of Rs. 8,27,46,666,67 (or £ 62,06,000) each of the fixed Indian contribution towards the cost of replacement works in Pakistan have been paid to the World Bank for credit to the Indus Basin Development Fund.

Joint Rivers Commission—Following the Joint Declaration of March 19, 1972 of the Prime Minist : of India and Bangladesh, it was agreed to establish a Joi t Rivers Commission to carry out a comprehensive survey of the river system shared by the two countries and formulate projects concerning both the countries in the field of flood control and river development. The Commission has been functioning since June 1972.

Ganga Flood Control Commission—was constituted in April 1972 with its Headquarters at Patna for formulating a comprehensive plan of flood control in the Ganga basin.

Ganga Basin Water Resources Organisation—is carrying out studies relating to hydrological measurement, and preparation of Water Utilisation Plan for the Ganga basin.

Rural Engineering Surveys—was framed in October 1971 to bring an integrated, methodical and scientific approach to the solution of development problems of the villages.

CENTRAL WATER AND POWER COMMISSION—is responsible for initiating and co-ordinating schemes for the control, conservation, and utilisation of water resources throughout the country, for purposes of irrigation, navigation, flood control and water-power generation, thermal power development and transmission and utilisation of electric energy. This is the highest expert body of irrigation and power engineering at the Centre. The Commission consists of a Chairman, a Vice-Chairman and eight members, four in the Water Wing and four in the Power Wing. For the effective discharge of its functions the two Wings have been divided into following Directorates and Cells—

Water Wing—(1) Administration and Co-ordination, (2) Waterways, Irrigation and Navigation, (3) Technical Examination, (4) Plant and Machinery, (5) Dams, (6) Canals, (7) Cost Control, (8) Union Territories, (9) Investigations, (10) Flood Control, (11) Hydrology and Statistics, (12) Soil Conservation, (13) Technical Manpower and Stores, (14) Surface Water Studies, (15) Progress Recording, (16) Flood Estimation, (17) Central Water and Power Research Station, Poona, (18) Central Soil Mechanics and Concrete Research Station, (19) Instrumentation Designs, (20) Designs of Gates and Structures.

Power Wing—(1) Transmission, (2) Rural Electrification, (3) Union Territories, (4) Load Survey, (5) Technical Examination & Co-ordination, (6) Commercial, (7) Foreign Exchange, (8) Hydro-electric Planning, (9) Super Grid, (10) Thermal Planning, (11) Plan, Construction and Procurement, (12) Man-power, (13) Delhi Cell, (14) Power Research Institute, Bangalore, (15) Progress Investigation, (16) Specialised Engineering Organisation.

A Metric Cell was set up in the C.W.P.C. in Dec. 1965 to assist the various organisations in the Irrigation and Power Sector at the Centre and in the States in the change-over to the metric system of weights and measures.

A Technical Committee constituted by the Planning Commission, on which C.P.W.C. is represented, is charged with the assessment of water resources and their utilization. The Commission is assisted by two Chief Engineers in charge of the work relating to floods.

A separate Directorate of Statistics to examine the statistical activities in the Commission was set up in September, 1968. The functions of the Directorate are to collect, complete and publish the statistical data relating to irrigation, flood control and power project.

NATIONAL PROJECTS CONSTRUCTION CORPORATION—(See index).

FLOOD CONTROL AND SOIL CONSERVATION—India has established a Central Flood Control Board at the top to co-ordinate the work of various State Flood Control Boards and River Commissions, 15 State Flood Control Boards assisted by their Technical Advisory Committees at the State level, and 4 River Commissions at the inter-State level, are functioning in the country. A Flood Forecasting Unit, established in 1958, deals with the studies for evolving a suitable flood forecasting technique. The Flood Forecasting centres are located at Delhi, Gauhati, Bhubaneswar, Patna, Surat, Jalpaiguri, Hyderabad and Lucknow.

The National Flood Control Programme was lunched in 1954. The protective measures implemented since then have covered about 71 lakhs hectares out of the total estimated flood prone area of 200 lakh hectares. The works implemented include construction of 7500 km. of embankments, 11500 km. of drainage channels, 205 town protection schemes and raising of 4600 villages above high flood level.

A Central **Flood Forecasting Organisation**—was established during 1969 in the Central Water and Power Commission with centres at Gauhati, Balasore, Surat, Patna, Varanasi and Jalpaiguri. A radar has been set up on the eastern coast to issue warning against the cyclone. The Soil Conservation Directorate of the C.W.P.C. is maintaining close liaison with the State Governments, Ministry of Food and Agriculture and the Planning Commission. Central Soil and Materials Research Station is functioning from New Delhi.

Water and Power Development Consultancy Services (India) Ltd.—was set up on June 26, 1969 with an authorised capital Rs. 50 lakhs for making India's expertise in the field of irrigation and power available to developing countries.

MAIN TYPES OF IRRIGATION—(1) Canal Irrigation—Canals draw their waters from rivers or from artificial storage. River canals are of three classes—Inundation canal, Perennial canal and Storage canal.

(2) The rest of the Irrigation is done through tanks, surface percolation wells, tube-wells, etc. The term minor applies to this type of irrigation.

(a) Surface percolation wells exist all over the country.

(b) **Tanks and Reservoirs**—The water collects either in natural depression on the beds of streams of dammed-up and shallow basins created for storing water.

(c) Flood and inundation irrigation are the other sources of minor irrigation in India. The monsoon flood water of rivers is diverted to lands which are above the level of the ordinary supply in a river. The flood water soaks at lands and the moisture retained in the soil allows cultivation of a winter season crop, which otherwise would not be possible.

(d) **Tube-wells**—This means lifting of water from underground by means of mechanical pumps.

The irrigation is again divided into three classes :

(1) **Productive**—The capital for the construction and extension of this class is provided out of borrowed money or by appropriation from Famine Insurance Grant, and which is expected to yield within ten years of their completion sufficient revenue to pay their working expenses as well as the interest on the capital expended on their construction.

(2) **Unproductive**—Unproductive works are those which yield a net revenue and are less than the percentage fixed for productive works. These are constructed primarily as protection against famine, and the cost of construction is provided out of current revenue or by appropriation from Famine Insurance Grant.

(2) **Minor**—These are small works for which detailed capital or revenue accounts are maintained ; such works may be either productive or unproductive.

Dams and Barrages—It is necessary to understand the difference between a dam and a barrage in connection with river valley projects. Any obstruction built to stem the flow of water in a stream is a dam and from this point of view, a barrage also is a dam. But a dam has come to be synonymous with a comparatively high structure built to form a reservoir and a barrage with a structure which controls and regulates the flow of water.

RESEARCH—The fundamental and basic research in the country in the field of irrigation and power is carried on by the Central Board of Irrigation and Power. The Board also looks after the co-ordination of the work of 21 research stations in the country.

Silt and Construction Material Directorate—assists is carrying out surveys, investigations, collections, of essential silt data. The Directorate has four divisions.

Central Water and Power Research Station, **Poona**—continues its research activities in a comprehensive field of research for solving a variety of difficult and complex problems in pure and applied fluid mechanics from foundation and construction materials analysis. A Cavitation Research Laboratory is being set up with assistance from the U.N. Development Programme.

Central Soil and Materials Research Station, New Delhi—continues to perform very useful work, such as surveys, investigations, collection of essential sediment data and research on suspended sediment sampling equipment, construction material, etc. required for the design and execution of irrigation and power projects and flood control schemes.

RIVER VALLEY PROJECTS

The State Governments are primarily responsible for the planning and execution of irrigation and power projects. Most of the major multipurpose projects are, however, being financed entirely by the loans from Central Government. To ensure their efficient, economical and early execution, Control Boards have been set up for each major project. Only exception is the Damodar Valley Project, for which a statutory corporation has been set up.

Beas Project—It is a joint venture of Punjab and Rajasthan with two units—(1) Beas-Sutlej Link and (2) Beas Dam at Pong. The first until envisages the diversion of the Beas Water into Sutlej to avail itself of 1,000-ft. fall at Dehar and 400-ft. fall at Bhakra for generation of electric power, etc. The total power potential is 733 mw. This Project will provide irrigation to a culturable commanded area of 13 lakh acres. The second unit, Pong Dam is located near Pong village dam rising 350 ft. above the river bed. A power plant with an installed capacity of 240 mw. will also be constructed here.

Gandak Project—An international agreement on the Gandak Irrigation and Power Project between Nepal and India was signed on Dec. 4, 1959. The project was inaugurated by the King of Nepal on May 4, 1964. It is primarily an irrigation project though a small quantum of power will also be generated. It is an inter-State project in which Bihar and Uttar Pradesh are the participating States, while irrigation and power benefits would also accrue to Nepal. The Project envisages the construction of barrage with a road-cum-railway bridge across the river Gandak at Bhaisalotan in Bihar. There will be two canal systems—Eastern Canal System and Western Canal System. The Project comprises (1) 2,437-ft. long barrage with a road bridge across the Gandak at Bhaisalotan, Bihar, (2) one power house with three generating units on the main western canal in Nepal territory, (3) two canals.

Damodar Valley Project—The aim of this multi-purpose project is to tame the turbulent Damodar and its tributaries which overflow their banks and bring destruction and misery to large parts of Bihar and West Bengal. It is a joint venture by the West Bengal, Bihar and Central Governments.

The project comprises the construction of a series of four dams on the main Damodar river and its tributaries of Konar, Tilaiya, Maithon and Panchet hills with hydro-electric stations attached to the last three thermal power stations on each at Bokaro, Durgapur and Chandrapura, a network of transmission distribution line of about 1,725 miles and the Durgapur Barrage and irrigation system of 1,550 miles of canals. The project is expected to afford flood protection to the Damodar Valley and to extend irrigation facilities to an area of 10,26,000 acres. The installed capacity of the DVC power system is 1,061 MW. With the addition of the second unit at the Chandrapura Thermal Power Station, the generating capacity of the DVC power system has been raised.

Tilaiya Dam—is located about 12 miles from Kodarma railway station, across the Barakar river. It is a straight all-gravity concrete dam with earthen extension on either side. It is 1,200 ft. long and 99 ft. high. Its storage capacity is 3,20,000 acre-ft.

Konar Dam—is located in Hazaribagh district of Bihar, across the Konar river. The storage capacity of the reservoir is 173,000 acre-ft. and the waterspread is 10.3 sq. miles. 160 ft. high, this Dam is a composite structure with a 848-ft. long concrete section and earthen embankments on the flanks running to a total length of 11,639 ft. It was completed in 1954.

Maithon Dam—is situated 16 miles from Asansol railway station across the Barakar river. It is a rolled earthen dam with concrete spillway. The Dam is 162 ft. high and 2,062 ft. long. It is mainly designed for flood control. The underground hydro-electric station near this dam has a capacity of 60,000 kw. The concrete spillway of the dam is 612 ft. long. On either side, a total length of 14,462 feet of certain dyke stretches round the reservoir.

Panchet Hill Dam in Dhanbad district of Bihar, across the Damodar river, is the largest of the dams in the Damodar Valley. It is primarily designed for flood control and power generation. It comprises an earthen dam 7,135 ft. long and 134 ft. high, a concrete spillway 1,215 ft. long and 13,805 ft. dykes and stores 12,14,000 acre-ft of water. The power house provides for a generating capacity of 40,000 kw. initially. The Dam was inaugurated in Dec. 1956.

Tenughat Dam—An agreement has been evolved by the Irrigation and Power Ministry with the Governments of West Bengal and Bihar on the construction of a dam at Tenughat on the Damodar river. The water from the dam is to be available to a super-thermal power station at Bhojudih.

Durgapur Barrage is situated about a mile from Durgapur railway station and 25 miles from Asansol across the Damodar river. It is 2,271 ft. long and 38 ft. high and was opened in Aug. 1955. It will irrigate through a network of canals and distributaries. Nearly 85 miles of the main left bank canal will be navigable and will provide an alternative means of communication between Calcutta and coal-fields of Raniganj.

Durgapur Thermal Power Station—This station with an installed capacity of 150,000 kw. is expected to cost Rs. 1.32 crores.

Bokaro Thermal Power House is about 12 miles downstream of the Konar Dam in Hazaribagh district of Bihar. It was commissioned in Feb. 1953 and its installed capacity is 1,63,000 kw. The power is being consumed by Tatas at Jamshedpur, Hirapur copper mine at Ghatsila, coal mines of West Bengal and Bihar, industries around Asansol, Sindri and Calcutta.

Chandrapura Thermal Power Station—The second unit of 140 mw. at this station was commissioned in May 1956. On July 7, 1968, the third 140 mw. unit of the Chandrapura Thermal Power Station was commissioned.

Present Set-up of the D.V.C.—The Project in Damodar Valley has been transferred to the Government of West Bengal from Dec. 2, 1963 in the interest of economy and efficiency. The operation and maintenance wing of the Electricity Department of the D.V.C. has been transferred to Maithon.

Ghataprabha Project—envisages the construction of a 71-mile long Left Bank Canal taking off from the existing Dhapdai weir to irrigate 2.98 lakh acres in Belgaum and Bijapur district and a masonry dam at Hidkal to store 21,300 m. cft.

Farakka Barrage Project—is intended for the preservation and maintenance of the Calcutta Port and the navigability of the Hooghly river and will comprise a barrage across the Ganga at Farakka with a rail-cum-road bridge over it, a barrage across the Bhagirathi and a feeder canal.

The object of the Farakka Project is to save Calcutta Port from silting up. The Hooghly river serves at a navigation channel between the sea and the port. The main stream of the Ganga flows through another branch, namely Padma, and the Hooghly gets waters only when the Ganga is in high floods. The tidal bores in the sea ride on into the Hooghly and deposit heavy sediments year by year. To flush the sand and silt back into the sea it is necessary to release water stream into the Hooghly in the upper reaches.

Tista Multi-purpose Project—envisages the construction of a barrage across the river Tista in West Bengal. It is programmed in two phases—(1) Tista Multi-purpose Barrage and (2) Tista Dam. The first phase of the Project is intended to generate hydro-electric power of 48,000 kw.

Chambal Project—The Chambal rises in the northern slopes of the Vindhyas at an elevation of 2,800 feet and flows across M. P., Rajasthan and Uttar Pradesh. The 1st stage of the Project consists of the construction of Gandhi Sagar Dam, a power house at the foot of the dam with 5 units of 23,000 kw. each transmission lines, Kotah Barrage, and Irrigation Canal System. The 2nd stage envisages the construction of a masonry dam on the main river (Rana Pratap Sagar Dam) a saddle dam cross Padajhar valley on the left flank and a power station with 4 units of 43,000 kw. each below Rana Pratap Sagar Dam. Stage III of the Project comprises Kotah Dam and a power station at its toe, about 15 miles below the Rana Pratap Sagar Dam.

Malaprabha Project—envisages the construction of a 145-ft. masonry dam across the Malaprabha river, a tributary of Krishna, at a site 7,000 ft. downstream of the entrance of the peacock gorge near village Vatnal in Belgaum district of Karnataka State. A Right Bank Canal will irrigate an area of 3 lakh acres.

Parambikulam-Aliyar Project—is a multi-valley Project. The Project envisages the construction of 7 reservoirs for harnessing the rivers Nirar, Sholayar, Parambikulum, Tunakadauvu. Peruvaripallem, Tekkadi and Aliyar, 12 miles of tunnels, a weir, 30 miles of lined contour canal and 120 of lined main canals. The reservoirs will irrigate an area of 2,40,000 acres in the dry arid regions of Coimbatore district, in addition to establishing and augmenting the irrigation supplies in Chittoor area of Kerala State and production of power.

Hirakud Dam Project—The Hirakud Dam Project in Orissa which involves the construction of the longest dam in the world, 15.748 ft. long, consists of a concrete-cum-masonry-cum-earthen dam across the Mahanadi river, 9 miles upstream of Sambalpur, with two canals for irrigation and hydro-electric installations.

Stage II of the Hirakud Hydro Power House at Burla by installation of two more generating units 37,000 kw. each and construction of Chiplima Power House with a generating units of 24,000 kw. each was completed and put into service in Sept. 1963.

Bhadra Reservoir Project—is a multi-purpose project. It envisages the construction of a masonry dam, 1,445 ft. long, 235 ft. above the deepest foundation and 194 ft. above the river bed with a 3,610-ft. long earth embankment across river Bhadra near Lakkavalli village in Karnataka with two canals.

Kakrapara Project—This Project is the first phase of the development of the Tapti Valley. The weir, 2,038 ft. long and 45 ft. high on the rocky river bed near Kakrapara, 50 miles upstream of Surat, was completed in June 1963. The weir was completed in 1955.

Sone Barrage Project—envisages: (1) Construction of a barrage 4,616 ft. long, five miles upstream of the existing anicut at Dehri-on-Sone with two wing canals on either side. The sone Barrage Bridge is the longest bridge in the world and was completed and opened on 21st Nov., 1965. 2) Remodelling of the existing canal system. (3) Construction of western and eastern high-level canals.

Navgam Project—envisages the construction of a diversion dam at Navgam, Broach district, 12 miles from Raj Piple and a Low Level Canal.

Ukai Project—is a multi-purpose project which envisages the construction of a 236-ft. high dam on the river Tapti near village Ukai creating a reservoir of 8,511 million cu. m. capacity.

Pochampad Project—Comprises the construction of a masonry dam across Godavari river near Pochampad village in Nirmal taluk, Andhra Pradesh and excavation of a canal for length of 70 miles.

Mahi Irrigotion and Power Project (Bajaj Sagar Project)—envisages the construction of a 120-ft high dam across river Mahi below its confluence with Erau river near village Bor-Khera in Rajasthan. A saddle dam about 8 miles upstream of the main dam will be constructed for irrigation supplies.

Mahi Project—envisages the construction of a pick up weir across the river Mahi with a right bank canal in Gujarat State for irrigation an area of 4.6 lakh acres. Kadana Project, second stage of the Mahi Project, provides for the construction of a dam across Mahi at Kadana. It provides for the construction of a direct canal for irrigation 40,905 across of land in Panchmahal district.

Mahanadi Reservoir Project—near Gangrel village, about 80 km. from Raipur is expected to be completed in 1978. The foundation stone of this Rs. 25-crore project was laid on 5th June, 1972 by the Prime Minister. The project, besides providing irrigation to about 300,000 acres will also help expansion of the Bhilai Steel Plant. The project envisages the construction of a 74 ft. masonry-cum-earthen dam across the Mahanadi.

Kangsabati Project—envisages construction of two independent earthen dams on the Kangsabati river and on the Kumari river (a tributary to Kangsabati), about a mile upstream of their confluence near Ambikanagar in the Bankura district of West Bengal. The project is estimated to cost Rs. 45 crores when completed, the giant stonewall will create a reservoir of the capacity of 8 lakh acre-ft. and an irrigation potential of 11.10 lakh acres.

Ramganga Project—This multi-purpose project in Uttar Pradesh has three units:

(1) Dams and Appurtenant Works—There will be a 412-ft. high earth and rockfill dam across the river Ramganga near Kalagarh in Garhwal and 252-ft. high saddle dam across the Chuisot stream. There will also be two diversion tunnels of 35 ft. diameter each for diverting the flow of the river. (2) Irrigation and Drainage Works—These consist of (a) 1,795 ft. long weir and (b) remodelling and extension of irrigation channels. (3) Power Generation Works—provide for a power house on the right bank of the river, at the toe of the main dam having 3 units of 60 mw. each.

Kosi Project—The three-unit Kosi scheme, affording protection against floods, will irrigate about 14.05 lakh acres annually in Bihar. The main features are: Unit I—Hanumantnagar Barrage and Headworks. A barrage is being constructed across the Kosi river about 3 miles above Hanumantnagar in Nepal. Unit II—Flood embankments (about 150 miles in length) along both the banks of the river, have already been completed (1959). Unit III—comprises the Eastern Kosi Canal which will take off from Hanumantnagar Barrage, will have four branches, namely, Murliganj, Janakinagar, Banmankhi and Araria branches.

The Western Kosi Canal Project envisages the construction of a 107 km long main canal of a capacity of 198 cumecs (700 cusecs) taking off from the western side of the Kosi Barrage located in Nepal. The canal will pass through Nepal for the first 34 km before entering India. It is designed to irrigate 0.14 lakhs ha. in Saptari district of Nepal. Irrigation of another 0.12 lakh ha. in Nepal by pump canal is also envisaged.

Nagarjunasagar Project—This Project, which is a scheme of Andhra Pradesh, comprises the construction of a masonry dam, 303 ft. high, near Nandikonda village across the river Krishna and two canals, each on either side, to irrigate an area of 6 lakh acres. The Right Bank Canal will be 135 miles long and the Left Bank Canal 108 miles. An area of 20.6 lakh acres will be irrigated by this Project. The reservoir will have a storage capacity of 54.4 lakh acre-feet and its water-spread will be 73.66 sq. miles. The dam will be provided with eight pan-stocks of 14 ft. diametre for the generation of power in the final stage.

Tawa Project—This Project in Madhya Pradesh envisages the construction of (1) a dam 5,315 ft. long and about 182 ft. high across the river Tawa, (2) two earthen dykes 771 ft. and 781 ft. long, (3) a network of canals and distributaries on either side of the river; (4) two power houses with total installed capacity of 42 mw, (5) connected transmission lines.

Bhima Project—The biggest of Maharashtra's irrigation projects on the Bhima river—a tributary of the Krishna—is meant to irrigate 450,000 acres.

Ittiadoh Project—On the Garhvi river, a tributary of the Vainganga, in the Vidarbha region of Maharashtra is meant to irrigate 75,000 acres.

Port of Calcutta Project—The Ganga Barrage Project envisages (1) a barrage across the Ganga at Farakka in Mushidabad district (see Index), (2) a barrage across the Bhagirathi at Jangipur in Murshidabad district, about the outfall of the canal, (3) a feeder canal, 26½-mile long taking off from upstream of the Ganga Barrage on the right bank and outfalling into the Bhagirathi downstream of the Jangipur Barrage.

Kundah Hydro-Electric Project—is situated in the Nilgiris. It comprises four stages. First and second stages include 2 power houses, the third and fourth stages comprises 3rd and 4th power houses. The project is built with aid from the Canadian Government under the Colombo Plan.

Rajasthan Canal Project—This Project envisages the construction of a canal taking off from the Harike Barrage across the river Sutlej and has been divided into two parts: (1) Rajasthan Feeder—134-mile long, of which the first 110 miles lie in Punjab; (2) Rajasthan Canal 291-mile long lying entirely in Rajasthan. The

Rajasthan Canal Project on completion of both the phases will provide irrigation facilities to an area of 28.75 lakh acres annually.

Jayakwadi Project—across the river Godavari consists of a dam 120 ft. high near Paithan and a left bank canal 115 miles long. This will irrigate an area of 1.42 lakh hectres. The work was inaugurated on 18th Oct. 1965.

Upper Krishna Project—consists of a masonry spillway dam with earthen flangs across Krishna river at Narayanpur in Gulbarga district of Karnataka. The dam is 127.5 ft. high above the river-bed level and is 34,200 ft. long. Two canals take off from the dam. The Project will irrigate an area of 6 lakh acres.

MAJOR IRRIGATION PROJECTS

(With the year of completion within brackets)

Andhra Pradesh—Romperu drainage (1956) ; Godavari delta system (1890) ; Nizam Sagar (1931); Rallapad (1957); Upper Pennah (1958); K. C. Canal (1963-64) ; Prakasam Barrage (1959-60) ; Bhairavani Tippa (1961-62) ; Godavari, Stage I (1950-60) ; Tungabhadra (1951-56) ; Kaddam (1968-69).

Bihar—Sone Canal (1891) ; Kamala Canal (1958) ; Mayurakshi Left Bank Canal (1957); Tribeni Canal extension (1958-59) ; Nagi Dam (1960-61) ; Badua (1967-68), Sone Barrage (1968-69).

Gujarat—Rangola (1952) ; Brahmani (1954) ; Maj (1956) ; Aji (1961-62) ; Machhu I. (1961-62) ; Kakrapar (1968-69) ; Banas (1968-69) ; Hathmati (1968-69).

Haryana—Bhakra Nangal (1951-56).

Jammu and Kashmir—Sind Valley (1956).

Karnataka—Krishna Sagar Dam and Canal (1930) ; Tunga Anicut (1958-59) ; Nugu (1958-59) ; Ghataprabha Left Bank Canal, Stage I (1958-59) ; Tungabhadra (1951-56).

Kerala—Kuttand (1957); Peechi (1957-58) ; Nayyar I (1959-60); Malampuzhal (1959-60) ; Walayar Reservoir (1958-59) ; Chalakudy, Stage I (1957-58) ; Wadakkancheri (1959-60).

Madhya Pradesh—Tandula Canals (1921) ; Mahanadi Canals (1927) ; Sampna (1959) ; Gangulpara (1960-61) ; Hasdeo (1968-69).

Maharashtra—Nira Left Bank Canal (1960) ; Pravara River Works (1938) ; Nira Right Bank Canal (1938) ; Gangapur Reservoir (1959) ; Ghod (1967-68) ; Vir (1967-68) ; Khadakwasla, Stage I (1968-69) ; Purna (1968-69).

Orissa—Rashi-Kulya Canal (1901); Hirakud Stage I (1951-65); Salandi (1968-69).

Punjab—Western Jammu Canal (1886); Upper Bari Doab Canal (1878-79); Sirhind Canal (1886-87); Eastern Canal Extension (1933); Nangal Barrage (1954); Western Jamuna Canal extension (1944-45); Dadri (1961); Bhakra Nangal (1951-56); Harike (1967-68); Sirhind Feeder (1967-68).

Rajasthan—Jawai Project (1958-59); Namona (1959); Sareri (1960); Sarbati Project (1961); Meja Project (1961); Bhakra Nangal (1951-56).

Tamil Nadu—Periyar System (1897); Kaveri Mettur (1934); Lower Bhavani (1956); Perinchari (1956); Araniar Reservoir (1957); Mettur Canals (1957); Krishnagiri (1958); Sathanur (1959); Amravathi (1959); Kattalai High Level Canal Scheme (1959); Pullambadi Canal Scheme (1959); Mani Muthar (1967-68).

Uttar Pradesh—Upper Ganga Canal (1884); Agra Canal remodelling (1959-60); Lower Ganga Canal (1878); Sarda Canal (1926); Sarda Canal extension (1955-56); Matatilla Stage I (1957-58); Betwa Canal (1886); Jirgo Reservoir (1960); Belan and Tons Canal (1958-59); Ban-Ganga Canal (1956-57); Ghagar Canal (1917); Sarda Sagar, Stage I (1960-61); Matatila (1951-56); Sarda Sagar Stage I (1967-68).

West Bengal—Damodar Canal (1956); Mayurakshi (1956-57).

Power Generation

POWER GENERATION IN INDIA—Electricity supplies only a portion of the energy consumption of India. At the end of March 1972, the generating capacity in India was 17.7 million kw. The network comprises over 10 lakh kms. of the transmission and distribution system. The per capita consumption of electricity which was only 18 units in 1950-51 has gone up to 90 units in 1970-71. The investment in the power sector at the commencement of the Fourth Plan was Rs. 3,629 crores. During the Fourth Plan the total expenditure for power was estimated at Rs. 2919.97 crores. The total investment on power at the end of Fourth Plan would be of the order of Rs. 6548.97 crores. The Fifth Plan power programme includes 27 continuing projects (18 hydro and 9 thermal) and 47 new projects (27 hydro and 20 thermal) totalling in addition of 16.50 million kw in the next 5 years. The proposed investment in the power sector in the Fifth Plan is Rs. 6190 crores.

Resources for Power Development

The main sources of electricity generation in India are the Hydro power plants, thermal power plants based on coal and Nuclear power plants—although to some extent diesel generation is being resorted to feed isolated localities. Natural Gas has been utilised in Gujarat and Assam, where this resource is available to a limited extent.

Hydro Electric Resources

The country has substantial hydro-electric power resources. The Hydro Electric Schemes in operation utilise a potential of about 2.8 million kw. Schemes currently under construction would develop a further potential of 1.6 million kw. On completion of these schemes, the utilisation of the potential would amount to about 17.6%. The regionwise distribution of hydro potential of the country as assessed by CW&PC, and the potential already developed and under development are indicated below:

Sl. No.	Region	Total potential (MW) continuous	TWh (thousand million kWh)	Potential developed & under development so far	
				Potential (MW) continuous	% of total for regional
1.	Northern	6348.9	56.40	1470.0	22.80
2.	Western	4301.3	37.68	564.9	13.12
3.	Southern	4858.2	42.56	1932.3	39.80
4.	Eastern	1616.2	14.16	344.4	21.3
5.	North-Eastern	7478.6	65.51	22.5	0.30
	Total:	24603.2	216.31	4334.1	17.60

ORGANISATION FOR POWER DEVELOPMENT—Electricity supply in India began with the passing of India Electricity Act of 1910. The Electricity (Supply) Act was passed in 1948 to ensure rapid and orderly generation of electricity. It provides for the setting up of a Central Electricity Authority for the whole country and State Electricity Boards for regions. The Central Electricity Authority was constituted in 1950 and the State Electricity Boards have been set up in almost all the States.

Central Electricity Authority—was set up under Sec. 3 of the Electricity (Supply) Act of 1948 to perform the following functions —(1) to develop a sound, adequate and uniform national power policy; (2) to act as arbitrators in matters of dispute arising between the State Government and the Board and a licensee or other person as permitted under the Act; (3) to carry out investigations and collect and record data concerning the generation, distribution and utilization of power and development of power resources; (4) to publish information secured under the Act and to provide for publication of reports and investigation; (5) to give decisions on applications in respect of the investments in depreciation or other reserves outside the business of electricity supply; (6) to scrutinize and make recommendation on scheme of the State Electricity Boards costing more than Rs. 1 crore each.

Central Electricity Board—was constituted with powers to make rules for regulating generation, transmission, supply and use of electrical energy and generally to carry out the purposes and objects of the Indian Electricity Act, 1910. It is a broad based organisation consisting of representatives of the Central Government, State Government, Union Territories, State Electricity Boards, Federation of Electricity Undertakings of India, Railway Board, Mines Department and the Indian Standards Institution.

State Electricity Boards—have been formed in almost all the States. These Boards are required to nationalise the production and supply of electricity in their respective areas, to give bulk supplies of power to existing licensed undertaking and retail power wherever necessary and direct licenses to achieve maximum economy and efficiency in the operation of their undertakings.

Regional Electricity Boards—have been formed into the following 5 regions to advise in the matter of integrated operation of power systems within its jurisdiction: Northern, Southern, Eastern, Western and North-Eastern.

Central Board of Irrigation and Power—continues to function as a central co-ordinating authority for research work in the field of hydraulic and hydro-electric engineering. It is an autonomous body. There are many research stations guided by the Board. The Board has also a Research Committee attached to it to co-ordinate research on irrigation, hydro-electric and allied subjects.

Central Electricity Consultative Council—has been set up in Jan. 1968 with the Union Minister of Irrigation and Power as Chairman, and representatives of the Central and State Governments, Union Territories, State Electricity Boards, Members of Parliament, Federation of Indian Chambers of Commerce and Industry, Federation of Electricity Undertakings of India, India Electrical Manufacturers Association, etc., as members, with a view to establishing closer relations between suppliers and users of electricity affording opportunities for consultation relating to the various aspects of power development in the country such as generation, transmission and distribution, and also the services provided by electricity undertakings.

Rural Electrification Corporation Ltd.—has been set up in the public sector on 25th July, 1969 with an initial capital of Rs. 10 crores and with an outlay of Rs. 150 crores in the Fourth Plan. The main objects of the Corporation are to finance rural electrification schemes, to promote and finance rural electric corporations in India and to subscribe to special rural electrification bonds that may be issued by the State Electricity Boards.

RURAL ELECTRIFICATION—The number of village electrified has gone up from 3,061 in March 1951 to 1,71,219 in Dec. 1975. The number of irrigation pumping sets energised had increased from 18,700 in 1951 to 27,08,513 by Dec. 1975. The State of Haryana and the Union Territories of Pondicherry and Delhi have achieved the distinction of having taken electricity to all their villages.

NUCLEAR PROJECT—Nuclear power is expected to play a progressively increasing part in meeting energy demands in future years. A nuclear power station is built at Tarapore, Rana Pratap Sagar, near Bombay. A second atomic power station will be installed near Mahabalipuram in Tamil Nadu State (see Atomic Energy Section).

CENTRAL WATER AND POWER COMMISSION—See Index.

POWER RESEARCH—The Power Research Institute has been established at Bangalore for providing facilities for research and investigation in the fields of high voltage engineering, power system stability, electrical insulation generation, generation, transmission and distribution, etc. The Institute have, two divisions, one at Bangalore for undertaking research on problems connected with general electrical engineering and high voltage techniques and the other at Bhopal for switchgear testing and development. Financial assistance for the project was secured from U.N. Special Fund. There are two technical Centres at Kohat and at Nagarjunasagar.

Two training institutes have been set up, one at Durgapur and the other at Neyveli to train personnel for operation and maintenance of the thermal power stations.

HYDRO-ELECTRIC AND THERMAL PROJECTS

Kotahgudam Thermal Power Station—It is proposed to instal a thermal power station at Kotahgudam coal mines region in the Telengana areas of Andhra Pradesh. ,

Delhi Electricity Supply Undertaking—was completed during September 1963. The total available power is 161 mw.

Dhuvaran Thermal Station—is located on the bank of the river Mahi at Dhuvaran in the Khaira district of Gujarat State. The first stage of the Project comprises of four generating units of 62.5 mw each. The project was completed in all respects in July 1965. The second stage of the scheme provides for installation of two additional units of 125/140 mw.

Baira Siul Hydro-Electric Project—with an installed capacity of 200 mw comprising three generating sets of 66 mw each envisages the utilisation of the river flows of Baira, Bhaledh and Siul in Himachal Pradesh for power generation at Puniari Power Station. The project has been estimated to cost Rs. 2,048.80 lakhs.

Bhakra Right Bank Power Station—utilises the power potential available at the Bhakra Dam.

Yamuna Hydel Scheme—proposes to harness the river Yamuna and its tributary Tons in 2 stages. The first stage envisages construction of a barrage at Dakpathar, 2 miles downstream of the confluence of Yamuna and Tons, for diverting the water into a power channel on which two power stations will be constructed with an installation of 3 units of 11,250 kw each (at Dhakrani) and 3 units of 17,000 kw each (at Dhalipur). The second stage envisages the construction of a diversion dam near village Inchari, utilising this water in power house I at Chibro with an installation of four units of 57 mw each and further utilisation of the tailrace water power house I in the power house II at Khodri with an installation of four units of 24 mw each.

Delhi Thermal Project—Three units of 50-62.5 mw each are being installed. A barrage across Yamuna is proposed to be constructed.

Bhadra Hydro-Electric Project—The Bhadra hydro-electric project with an installed capacity of 33,200 kw. is a major source of power supply in Karnataka.

Ramagundam Thermal Power Station—is situated in the Telengana region and has an installed capacity of 37.5 mw comprising three 12.5 mw units. The power station was commissioned in 1957. However, owing to rapid growth of demand for power in this region, the extension of Ramagundam Power Station by a 62.5 mw generating units was sanctioned under the Third Plan.

Upper Sileru Hydro-electric Project—The project utilises the tail waters of the Machkund Power Station, comprises the construction of a diversion weir about 35 ft. high across the Sileru river in Andhra' Pradesh, and a water conductor system to the power station which will house 2 units of 60 mw each initially.

Pamba-Kakki Hydro-electric Project—envisages tapping of the potential of the Pambi Valley in the Kerala State.

Idikki Hydro-electric Project—envisages development of the hydro-electric resources of the Upper Periyar Valley and is the biggest project in Kerala. The scheme envisages installation of five units of 100 mw. each.

Kundah Hydro-electric Project—The first two stages of the Project with an installed capacity .of 180 mw have already been completed. The third stage of the Project has already began. It is being financed by Canada. Stage III provides for the installation of a third generating unit of 20 mw in the existing Power House No. I and fifth unit of 35 mw in Power House No. II and one unit of 20 mw, two units of 60 mw each and one unit of 50 mw in three more power station.

Salal Hydro-electric Project—with an installed capacity of 270 mw comprising three generating sets of 90 mw each envisages utilisation of flows of the Chenab on a run-of-the river basis at the head of about 300 ft. for power generation in Jammu & Kashmir. The Project has been estimated to cost Rs. 5515.94 lakhs.

Mettur Tunnel Project—provides for utilisation of discharge of 20,000 cusecs from the existing Mettur reservoir by installing 4 units at the site of the existing Mettur Dam. The Project will have four generating units of 50 mw each.

Neyveli Thermal Power Project—The Project had been under erection since 1961 at Neyveli, South Arcot district about 140 miles from the Madras city. The Russians have erected the six units of 50 mw each of this thermal station in the first stage.

Koyna Hydro-electric Project—was designed to be completed in three stages. The four units of Stage I of the Project has been commissioned and handed over to the State Electricity Board of Maharashtra. Work on four generating units of 75 mw. each, is in progress.

Sharavati Valley Project—comprises construction of a storage dam in Mysore, 184 ft. high above the river bed and 6,860 ft. long. The Mahatma Gandhi hydro-electric scheme in the Sharavati Valley with a total capacity of 1,20,000 kw. was completed in 1952. The first stage of the Sharavati valley project, started in the early part of the Second Plan, consisted of installation of two units of 89,100 kw each. The growing load demand has made it necessary to take up the second and ultimate stages of the project, which consists of six units of 89,100 kw each and two units of the same capacity respectively.

Balimela Project—on the Sileru river. It envisages utlisation of the tail waters of the existing Machkund power station in Orissa.

Obra Hydro-electric Project—envisages utilisation of the trailrace waters from Rihand power station over a drop of 68 ft. of the Rihand river downstream of the Rihand Dam power station.

Obra Thermal Power Station—with five generating units of 50 mw each at Obra in Mirzapur district of U. P.

Rihand Project—envisages the construction of a concrete gravity dam across the river Rihand near Pipri village in the Mirzapur district of U. P. The dam is 1,021.3 yards long and 102 yards high above the river-bed. The power house is designed to house six generating units of 50 mw each.

Loktak Hydro-electric Project—with an installed generating capacity of 70 mw has been estimated to cost Rs. 1,025 lakhs. It is in Manipur.

Bandel Thermal Power Station—is located near Bandel about 35 miles north of Calcutta, close to the river Hooghly by the side of Bandel-Baharwa railway line. The station will comprise 4 units of 75-82.5 mw each. An amount of Rs. 7 crores would be spent on Bandel's 5th unit of 200 mw during the first year of the Fifth Plan.

Trisuli Project—comprises the construction of a diversion weir across the Trisuli river which rises in Tibet 45 miles north of Trisuli. Foreign exchange is being paid by the Nepal Govt. but equivalent amount in rupees against it is paid to the Government of Nepal by the Government of India. King Mahendra of Nepal inaugurated this Rs. 14-crore Project on Feb. 24, 1967. Designed to generate 21,000 kw of power, the current output of 9,000 kw from three turbines already installed raises the installed hydel capacity of Nepal to eight-fold. Four more generators of 3,000 kw each are to be installed under the second instalment of the Indian assistance programme.

Umiam Hydro-electric Project—Stage I: involves construction of a 210-ft high dam on Umiam river in the Khasi Hills in Assam and installation of four generating units 9 mw each. Stage II: envisages installation of 2×9 mw units of Umiam and an additional unit of 2.8 mw at Umtru Power House.

Lower Jhelum Hydro-electric Project—is locatel in Baramulla district on river Jhelum. In the first stage, four units of 16 mw each will be installed and three more units of the same capacity will be added later.

Kobra Thermal Power Station: Stage II—The project envisages installation of four additional units of 50 mw each in the existing Kobra Power House near Chamba in Bilaspur district of U. P.

Amarkantak Thermal Power Station—The scheme involves installation of two units of 30 mw each. The power station is completed and both the generating units have been commissioned in Jan. 1965.

Badarpur Thermal Power Station—The first stage consists of the installation of 3×150 mw units with a provision for extension up to 4×150 mw.

Machkund Project—This hydro electric project is a joint venture of the Governments of Andhra Pradesh and Orissa.

Koel Karo H. E. Project—comprises a complete network of 4 power stations of 732 mw copacity and a 11.2 m diameter 2200 m long tunnel.

Nathpa Jhakri H. E. Project—envisages generation of 1020 mw hydro power utilising a gross head of 483 metres by means of a diversion dam across the Sutlej river, a 28 km long head race tunnel and an underground power house.

Kalinadi H. E. Project—has an installed capacity of 810 mw at a rated head of about 350 metres.

Namrup Thermal Project—The scheme comprises the installation of 3×23 mw Gas Turbine sets at Namrup in Assam by utilising the natural gas available from the Naharkatiya gas and oilfields.

Srisailam Project—The Project envisages the construction of: (1) a dam across Krishna river near the famous Srisailam shrine, 385 ft. high above bed level and 1,685 ft. long to impound the water of the river, (2) a power house at the toe of the dam to accommodate ultimately seven units of 110 mw each, (3) transmission lines and sub-stations.

Badarpur Thermal Power Station—envisages the construction of a thermal power station, initially with three units of 100 mw each, at Badarpur near Delhi, at an estimated cost of about Rs. 40 crores.

Barauni Thermal Power Station—The first stage of the Barauni Thermal Power Station with two sets of 15 mw each has been commissioned. In the second stage, to increase the firm capacity of the power station to 30 mw to meet the demand of the oil refinery, a third unit of 15 mw and two more units of 50 mw are being added to meet the urgent load demands in North Bihar.

Pathratu Thermal Power Station—is to cost Rs. 46.97 crores for supplying power to the Heavy Engineering Corporation at Hatia in Hazaribagh district of Bihar. The Project provides for installation of four generating units of 50 mw each and two units of 100 mw each.

Satpura Thermal Power Station—is a joint project of Rajasthan and Madhya Pradesh. Five generating units each of 62.5 mw capacity are being installed in the power station.

Talcher Thermal Power Station—envisages the construction of a thermal power station with an installed capacity of 250 mw (4 generating units of 62.5 mw each).

Santaldih Thermal Power Station—First 120 mw unit of the station was commissioned in 1973. Second unit of the station was expected to be commissioned during 1974. The work on the third and fourth units (120 mw each) is in progress.

Jaldhaka and Kurseong Stage II Projects—on completion these will generate an additional 10 mws.

Kolaghat Thermal Power Station—Work on 3 units of 200 mw each is in progress.

Legal Affairs

MINISTRY OF LAW—Legal affairs of Government of India are looked after by the Ministry of Law, Justice and Company Affairs. The main functions of the Ministry of Law are to advise other Ministries and Departments of the Central Government on legal matters including interpretation of laws, conveyancing and litigation, to draft Central bills and ordinances for States, whenever necessary, t scrutinise statutory rules and orders from the legal and draftin points of view and to make arrangements for the publication o Central enactments. This Ministry is also responsible for legislativ and other actions pertaining to subjects allotted to it, including ele tions to Parliament, the Legislatures of States and the offices of th President and Vice-Presidest and with matters relating to the Ele tion Commission, the Law Commission, Delimitation Commission, Official Language (Legislative) Commission and the Income-Tax Appellate Tribunal.

The Ministry has four Departments—*Department of Legal Affairs, Legislative Department, Department of Justice* and *the Department of Company Affairs.*

The *Department of Legal Affairs* deals with all matter relating to advice to the Ministries and Departments of the Central Government on all legal matters including interpretation of the Constitution. laws conveyancing and litigation. It also deals with the drafting of various agreements including contracts with parties in other countries. It is also responsible for the conduct of the cases in the Supreme Court on behalf of the Central Government and on behalf of the Governments of the State participating in the Central Agency Scheme. The functions of the Department also include matters relating to the legal profession and legal aid to the poor. It is administratively in charge of the Law Commission and the Income-tax Appellate Tribunal. The Department has, besides the main Secretariat at New Delhi, three branch Secretariats, one each at Bombay, Calcutta and Madras.

The *Legislative Department* is mainly concerned with the drafting of Bills, Ordinances and Regulations and scrutiny of delegated legislation. It is also concerned *inter alia* with the following matters:—

(1) Constitution Orders, that is to say, Orders required to be issued under the Constitution of India;
(2) Compilation and publication of Central Acts, Ordinances and Regulations;
(3) Preparation and publication of authorised Hindi translations of Central Acts, Ordinces and Regulations;
(4) Compilation and publication of General Statutory Rules and Orders, the Election Manual, Constitution of India, etc.
(5) Elections to Parliament, to the Legislatures of States, to offices of the President and Vice-President; the Election Commission;
(6) Official Language (Legislative) Commission;
(7) The following items (as regards legislation only):—
    (a) Marriage and divorce; infant's and minors; adoptions; wills; intestacy and succession; joint family and partition; (b) Transfer of property other than agricultural land, registration of deeds and documents; (c) Contracts, but not including those relating to agricultural land; (d) Actionable wrongs; (e) Bankruptcy and in-

TATA STUDIES IN CURRENT AFFAIRS

solvency; (f) Trusts and trustees, Administrators, General and Official Trustees; (g) Evidence and oaths; (h) Civil procedure including limitation and arbitration; (i) Charitable and religious endowments and religious institutions.

The *Department of Justice* is concerned with the appointment of Judges of the Supreme Court and of the High Courts. It is also responsible for laying down the conditions of service of the Judges of these courts, and also for administering the Notaries Act, 1952.

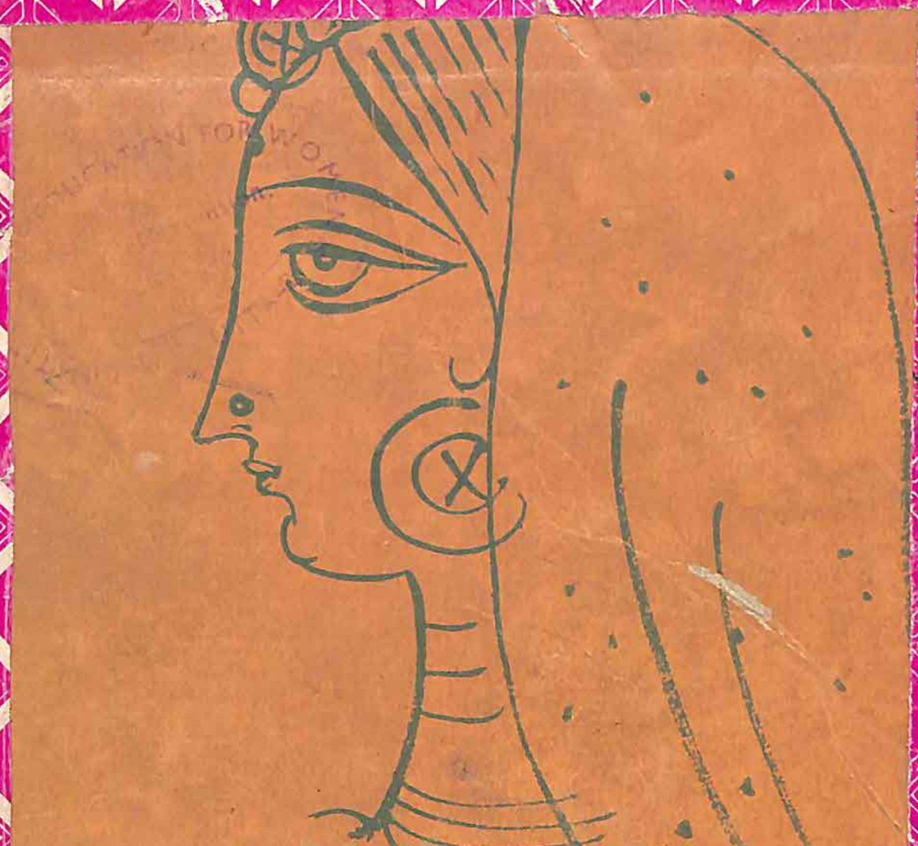
The *Department of Company Affairs* deals with the work relating to the administration of the Companies Act, 1956, the Monopolies and Restrictive Trade Practices Act, 1969, the Chartered Accounts Act, 1949, and the Cost and Works Accounts Act, 1959. In addition, the Department exercises supervisory control over the functioning of th Institute of Company Secretaries. The responsibility of discharg the functions of the Central Government relating to the adminis tion of the Partnership Act, 1932 also is that of this Departm

I. DEPARTMENT OF LEGAL AFFAIRS

(1) *Advice Section*—advises other Ministries and D on legal matters, including interpretation of the prov Constitution and the various status, statutory rules, on Government litigation. It also deals with the dr tiny of contracts and other instruments to be ex favour of the Central Government. Bills requiring of the President before introduction in State ances requiring previous instructions of the Pre gation and Bills reserved for the assent of th from the legal aspect in this Section.

(2) *Litigation Section*—handles civil of Government in the Delhi High Court an for pa Delhi. The main function of this Secti ith all the papers furnished by the various nsel and spect of their cases and to brief the al, Solici also responsible for scrutinizing bill Solicitors at them to the Department concerne he conduct of

(3) *Judicial Section*—deals engagement of Government C Officers, e.g., Attorney-Gene Solicitor-General, Government Government Pleaders for t



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